

Bureau of Land Management (BLM)

Kanab Field Office RMP/EIS

Final Analysis of the Management Situation



December 2005

Final Analysis of the Management Situation

for the

Kanab Resource Management Plan

and

Environmental Impact Statement

for

Public Lands Administered

by the

**Bureau of Land Management
Kanab Field Office**

Utah

Prepared by
**United States Department of the Interior
Bureau of Land Management
Kanab Field Office**

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CHAPTER 1 – INTRODUCTION

PURPOSE AND NEED FOR THE LAND USE PLAN REVISION

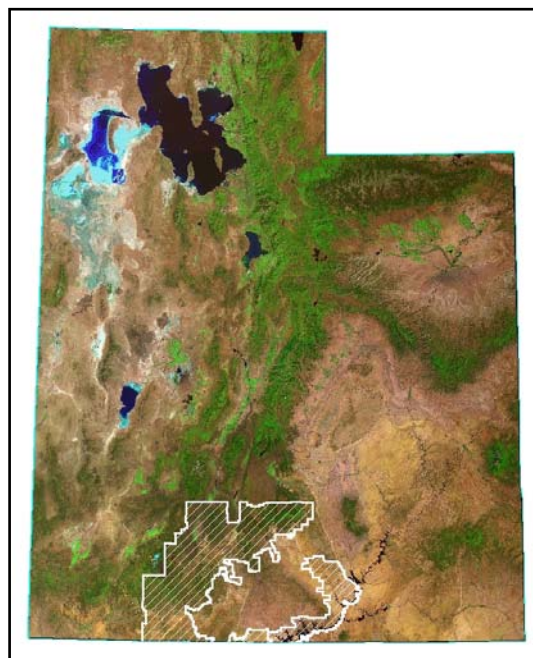
The Federal Land Policy and Management Act of 1976 (FLPMA) requires that the Bureau of Land Management (BLM) “develop, maintain, and when appropriate, revise land use plans” (43 United States Code [U.S.C.] 1712 [a]). BLM has determined it is necessary to revise existing land use plans (LUP) and prepare a new RMP for the Kanab Field Office (KFO) based on a number of new issues that have arisen since preparation of the existing plans. A Resource Management Plan (RMP) is a set of comprehensive, long-range decisions regarding the use and management of resources administered by BLM. In general, an RMP accomplishes two objectives—

- Provides an overview of goals, objectives, and needs associated with public land management
- Resolves multiple use conflicts or issues associated with the requirements that drive the preparation of the RMP

The BLM resource management planning process, explained in Title 43 of the Code of Federal Regulations (CFR), Part 1600, BLM 1601 Manual, and BLM Land Use Planning Handbook (H-1601-1) falls within the framework of the National Environmental Policy Act of 1969 (NEPA) environmental analysis and decision making process described in the Council on Environmental Quality regulations of 40 CFR 1500-1508, the Department of the Interior NEPA Manual (516 DM 1-7), and the BLM NEPA Handbook H-1790-1.

The planning area is located in south central Utah and includes all public lands and Federal minerals managed by the BLM Kanab Field Office, and the non-monument lands administered by Grand Staircase-Escalante National Monument (GSENM). The planning area is bordered by Piute County and the Dixie National Forest on the north, Washington County and Zion National Park on the west, Arizona on the south, and Johnson Canyon and GSENM on the east. The planning area also includes the Utah portion of the Paria Canyon-Vermilion Cliffs Wilderness, which is administered by the KFO. Major drainages in the planning area include the North Fork of the Virgin River, Orderville Gulch, East Fork of the Virgin River, Kanab Creek, Sevier River, Paria River, Birch Creek, and North Creek (Escalante River). Elevations range from over 10,000 feet on the northeast of the town of Escalante to about 4,500 feet at the Barracks along the East Fork of the Virgin River. Figure 1 shows the planning area in relation to the State of Utah.

Figure 1. Kanab RMP Planning Area



Of approximately 2,913,000 acres of land within the planning area, this RMP will make decisions for approximately 550,000 acres of public land administered by the KFO. The BLM also manages 96,600 acres of Federal mineral estate with private surface estate. Included in the above acreage are public lands administered by GSENM but lie outside of the monument boundary. These lands are located on the northern edge of the Monument, primarily in Bryce Valley and around the town of Escalante.

The lands in the RMP decision area are currently managed under the Escalante Management Framework Plan (MFP), 1981, Paria MFP, 1981, Vermilion MFP, 1981, Zion MFP, 1981, and the Cedar/Beaver/Garfield/Antimony RMP (CBGA-RMP), 1986 and their amendments. In addition to the LUPs currently in effect for these BLM-administered lands, numerous other plans exist that guide the management of adjacent Federal, state, and local lands in the planning area. BLM, to the extent possible, strives to implement management actions on BLM-administered lands that complement or at least do not conflict with management on the adjoining lands.

Since completion of the LUPs, considerable changes have occurred within the planning area. GSENM, created by Presidential Proclamation in 1996, removed about 1,086,000 acres from KFO administration which will therefore not be included in this planning effort. In October 1998, President Clinton signed into the law the Utah Schools and Land Exchange Act, which resulted in conveyance of over 47,000 acres of public lands (both surface and mineral estates) within the region to the State of Utah. This further reduced the acreage managed by the KFO. There are also new issues, higher levels of controversy around existing issues, and unforeseen public land uses and concerns that have arisen over the years that were neither included nor adequately addressed in the existing plans. In addition, heightened public awareness, increased public demand for use of the lands, new threatened and endangered (T&E) species listings, and increases in conflict between competing resource uses are not fully addressed by BLM's current LUPs. BLM is facing a wide range of issues affecting local communities, regional, state and national interests and the health of natural resources. Because of these issues, it is anticipated that the new Kanab RMP will require changes to some prior MFP/RMP decisions.

The Kanab RMP will establish consolidated guidance and updated objectives and management actions for the public lands in the decision area. It will be comprehensive in nature and will address issue categories applicable within the decision area that have been identified through agency, interagency, and public scoping efforts. A summary of issues and public concerns is detailed in the Kanab Scoping Report and summarized in Chapter 7 of this document. Issue categories to be addressed in the Kanab RMP are—

- Access and Travel Management
- Cultural Resources
- Fire Management
- Fish and Wildlife
- Forestry and Woodland Products
- Lands and Realty Management
- Livestock Grazing
- Minerals and Energy Resources
- Off-Highway Vehicle (OHV) Use
- Paleontology
- Recreation
- Riparian Management
- Social and Economic Values
- Soil, Water, and Air Resources
- Special Management Area Designations
- Special Status Species
- Vegetation Management
- Visual Resources Management
- Wilderness Characteristics

PURPOSE OF ANALYSIS OF THE MANAGEMENT SITUATION

This Analysis of the Management Situation (AMS) provides a description of the physical and biological characteristics and condition of the resources within the planning area, and how these resources are currently being managed. An analysis of the resource conditions and capabilities to respond to the issues provides a reference for developing LUPs. This document represents an early component of the resource management planning process. The AMS is not a comprehensive, detail-oriented document on various resources. It is intended to provide a summary analysis of existing management practices, including direction from existing plans and agency policy, local resources, social and economic conditions.

GENERAL DESCRIPTION OF PLANNING AREA AND RESOURCES/PROGRAMS

BLM's Land Use Planning Handbook (H-1601-1) differentiates between geographic areas associated with planning. They are—

- *Planning area.* The region within which BLM will make decisions during a planning effort. A planning area boundary includes all lands regardless of jurisdiction; however BLM will only make decisions on lands that fall under BLM jurisdiction (including subsurface minerals). For the purposes of this document, the planning area refers to the entire outlined area on Map 1.
- *Decision area.* The lands within a planning area for which BLM has authority to make land use and management decisions. In general, BLM has jurisdiction over all BLM-administered lands (surface and subsurface) and over the subsurface minerals only in areas of split estate (areas where BLM administers Federal subsurface minerals, but the surface is owned by a non-Federal entity, such as State Trust Land or private land). For the purposes of this document, the decision area refers to all BLM-administered surface and subsurface depicted on Maps 1 and 2.
- *Analysis area.* Any lands, regardless of jurisdiction, for which BLM synthesizes, analyzes, and interprets data and information that relates to planning for BLM-administered lands. Analyses that extend beyond the planning area allow management decisions to be made within the context of overall resource conditions and trends within the surrounding area. Use of the term “analysis area” in this document may vary according to resource or discussion. For example, the social and economic features section of this chapter refers to an analysis area comprised of Garfield and Kane Counties.

The lands within the planning area have a long and significant history of use by both Native Americans and European pioneers. The earliest inhabitants were hunters and gatherers that traveled extensively throughout the region. This use continued until about A.D. 1 when agriculture was adopted. Around A.D. 1200, the agrarian based culture began to disappear and was replaced by the Southern Paiutes that practiced a mixed economy. In the mid-1800s, the Mormon pioneers settled the area, farming lands where irrigation could be developed and grazing livestock on the open range. In the mid-1900s, the area's scenic qualities were discovered by the film industry and by recreationists interested in touring the varied landscapes. The western deserts, deep canyons, and mountain terrain are strong attractions to national and international television and film production companies. Many motion pictures and television productions have been filmed on the public lands within the planning area.

The planning area contains historical communities, diverse terrain, scenic landscapes, and recreational attractions that figure prominently in the settlement, history, culture, and enjoyment of southern Utah. Traditional occupational pursuits historically associated with Utah include farming, ranching, mining, tourism, retail trade, transportation, and construction. Major transportation routes include U.S. Highway

89, State Route 9, State Route 14, State Route 12, Johnson Canyon/Glendale Bench Road, Yellowjacket Road, Hancock Road, Posey Lake Road and Upper Cottonwood Canyon Road.

Intermingled with and adjacent to BLM-administered lands are resources of national and international significance, including Bryce Canyon National Park, Zion National Park, the North Rim of the Grand Canyon, Glen Canyon National Recreation Area (NRA), Pipe Spring National Monument, Cedar Breaks National Monument, GSENM, Grand Canyon-Parashant and Vermilion Cliffs National Monuments, Kodachrome Basin State Park, Escalante Petrified Forest State Park and Coral Pink Sand Dunes State Park. These special areas are interconnected for their recreational opportunities.

KEY FINDINGS

The AMS represents an early component of the RMP process, providing an analysis of the resource conditions and capabilities as a reference for developing the Kanab RMP. It is intended to provide a summary analysis of existing management practice and resource condition, resulting in a determination of management adequacy that will be carried forward into alternatives development. This section provides a summary of the key findings from the analysis.

In many respects, the five existing land use plans have done a good job in providing direction for management of the decision area. A few amendments to the plans have been made to adjust management for resources or in areas of particular concern (see discussion in the Purpose and Need for the Land Use Plan Revision section). Some of these amendments were to streamline the management of public lands, while others addressed issues that had arisen since completion of the existing plans. Key issues currently needing resolution can be grouped into three categories: 1) changes in policy, 2) changes in resource condition or demands, and 3) changes in administrative boundaries. The following paragraphs provide a brief summary of these key findings, as well as key findings for issues that were frequently raised in public scoping.

Changes in Policy

Several key issues needing resolution in this planning process generally relate to revised national level BLM policy. Due to these changes in policy, the existing land use plans do not adequately address various aspects of public land management. Such changes in policy include, but are not limited to, the development of Standards for Rangeland Health for BLM lands in Utah, revisions in cultural and paleontological resources management, Special Status Species management, development of a statewide riparian policy, migratory bird habitat management, and policies addressing soil, water and air management. This current planning process will allow for these policies to be integrated into the new RMP.

Changes in Resource Condition or Demands

Since completion of the existing land use plans there have been changes in resource conditions or demand for resource use. For example, there are several species that have been Federally listed and critical habitat designated, and other special status species identified, since the existing plans were developed. Additionally, changes in resource use levels and patterns have created areas of conflict between resource protection and resource uses, such as in Hog Canyon. This planning effort could provide new management direction to address existing and foreseeable changes to resource conditions and demands.

Changes in Administrative Boundaries

The need for this planning effort, as noted above, is partly due to changes in administrative boundaries since the existing land use plans were completed. Land transfers, realignment of BLM administrative units, and the designation of GSENM have changed the managerial responsibility and land use patterns throughout the planning area. This planning effort will update resource management and use allocations based on these new managerial responsibilities and the associated impacts these changes have on land use patterns.

Key Findings for High Profile Issues Identified in Scoping

A summary of the public scoping process and issues identified is located in Chapter 7 of this document. Of the 19 issue categories into which public scoping comments were analyzed, 56 percent of the issues raised applied to just 5 specific issue categories. This section highlights the key findings identified during the analysis of the management situation related to these issue categories; this section identifies those resources and uses within these categories where existing management does not adequately address the current resource demands or issues.

Wilderness Characteristics

Since completion of the existing land use plans, several areas outside existing WSAs have been identified as having wilderness characteristics (see Glossary). Existing land use plans have not considered these areas' wilderness characteristics in current land use allocations. Through this planning process, these values could be considered in relation to other resource values and resource uses to determine the appropriate mix of resource use and protection that best serves the FLPMA multiple use mandate.

Recreation

Since completion of the existing land use plans, BLM's recreation management policies have changed substantially, as have the recreational uses of the planning area. In the existing land use plans, recreation management is largely limited to facility development. Rather than focusing largely on facility development, current recreation management focuses on planning for specific recreational experiences and beneficial outcomes. This planning effort allows for management of the variety of recreational opportunities to be provided and the subsequent outcomes to be attained (activities, experiences, and benefits), as well as adjusting recreation management to changes in recreational use patterns.

Transportation

Existing transportation decisions are largely limited to OHV area designations, which are no longer compatible with new types and levels of use. Area designations would be reviewed and modified where needed. Additionally, route designations need to be made to meet existing and anticipated transportation needs, OHV use levels, and resource condition and objectives.

Minerals and Energy

Recent national level focus on production of mineral resources has renewed interest in areas available for mineral development, as well as stipulations that should be associated with development to protect other resources. This planning process could consider options for where such development could occur, as well as direction for future leasing and development of these resources within the decision area.

Special Designations

As part of the RMP process, BLM is required to inventory and analyze the rivers and streams within the decision area to determine whether rivers or segments of rivers are “eligible” to be considered for inclusion in the National Wild and Scenic Rivers System. If there are “eligible” segments, BLM must consider in the planning process whether any of the eligible segments are “suitable” for inclusion in the National Wild and Scenic Rivers System. If BLM determines through the planning process that there are suitable segments, they will forward that finding to Congress for a final determination on designation. BLM is also required to review public lands to determine whether Areas of Critical Environmental Concern (ACECs) should be designated for special management. As part of this process, BLM will also review whether the existing ACEC is still required for protection of the relevant and important values for which it was designated.

CHAPTER 2 – AREA PROFILE

This chapter describes the existing condition of the resources, resource uses, and other features of the planning/decision area. This chapter will provide a context for resources and uses by incorporating information compiled from multiple levels. This information will become the basis for the Affected Environment chapter of the RMP/EIS.

The first part of this chapter describes the existing natural and cultural resources, discussing resource indicators, current condition, trend, forecast, and key features. The second part of this chapter describes resource uses, discussing existing and potential use, forecasts and trends. The third section describes special designations and the last section describes social and economic features.

RESOURCES

The public lands administered by the KFO are managed for multiple uses. Multiple use management includes the management for resource uses and as well as resource values (see Glossary). The decision area is important for its natural areas and values, such as the large number of WSAs and special status species/habitat. These values are important ecologically and scientifically, as evidenced by the continued interest in the area by universities and colleges. The resources in the decision area have also provided the context for diverse land uses. The existing condition of the decision area's resources will provide the context in which management can continue to ensure the sustained yield of multiple uses.

The planning area is situated within the Colorado Plateau and Wasatch and Uinta Mountains Ecoregions (Omernik 1987). The Colorado Plateau Ecoregion, which encompasses the southern and eastern portions of the planning area, is characterized by rugged tableland topography with precipitous canyon walls that mark abrupt changes in local relief. The region contains a mixture of pinyon-juniper woodlands, grasses, and shrubs in the higher elevations, and saltbrush-greasewood communities in the lower elevations (EPA 2005). The Wasatch and Uinta Mountains Ecoregion, which encompasses the northwestern portion of the planning area, is composed of high, precipitous mountains with narrow crests and valleys flanked in some areas by dissected plateaus and open high mountains. The elevational banding of vegetation is similar to that of most of the mountainous regions in the western United States, with coniferous forests (primarily pinyon and juniper) covering much of the region. Grasses and shrubs are typical in the lower elevations with Douglas fir, ponderosa pine, aspen and juniper oak woodlands covering the low to middle elevations (EPA 2005).

The planning area is characteristic of these two ecoregions, containing the unique and important geological and biological features present in the regions. The Colorado Plateau Ecoregion is particularly unique, as it is the only area in the United States where large mountain rivers flow through exposed sandstone, creating large canyons and world-class recreation opportunities. The most distinguishing feature of the Wasatch and Uinta Mountains Ecoregion is its vast expanses of coniferous forests and large areas of Gambel oak. The Wasatch and Uinta Rockies differ climatically from other Rocky Mountain ecoregions in their relative aridity, a function of the extensive rain shadow cast by the Sierra Nevada 500 miles to the west. These regions are rich in endemic fish and insect species and provide habitat for many other forms of wildlife, including pronghorn, elk, mule deer, cougar, black bear, bighorn sheep, Federally listed birds, and BLM sensitive species.

Much of the Colorado Plateau and Wasatch and Uinta Mountains Ecoregions have been altered by human activity, such as livestock grazing, minerals exploration and development, logging, fire suppression, and OHV and other recreational use. As demands for these activities increase, the extent of human impacts will likely increase. Issues concerning resource conditions within the decision area primarily involve

balancing the use of resources for commercial and recreational purposes with need for protection of natural resource values.

The following sections will discuss in detail each resource present in the decision area and will include, where applicable, a discussion of the following five factors:

- Indicators: Factors that describe the resource condition
- Current Condition: Location, extent, and current condition of the resources
- Trends: Degree and direction of change between the present and some point in the past
- Forecast: Predicted changes in the condition of resources given current management
- Key Features: Geographic location, distribution, areas, or types of resource features that should guide management decisions.

Air Quality

The existing air quality in the planning area is typical of undeveloped regions in the western United States. Ambient pollutant levels are usually near or below measurable limits. Locations vulnerable to decreasing air quality include the immediate operation areas around surface disturbing activities such as energy and mineral development projects and farm tilling, local population centers affected by residential emissions.

The Utah Division of Air Quality is responsible for regulating and monitoring air quality in Utah. Measurements are typically taken in urban areas where ambient pollution levels are expected to be the highest. Inhalable particulate matter (PM₁₀ and PM_{2.5}) concentrations are expected to be higher near towns and unpaved roads. Regional PM₁₀ and PM_{2.5} levels are likely a result of fugitive dust sources.

The most recent Utah Division of Air Quality Statewide Emissions Inventory Report shows the primary air pollutant in Garfield and Kane Counties is volatile organic compounds (VOC), followed by carbon monoxide (CO), PM₁₀, Nitrogen Oxides (NO_x), Sulfur Oxides (SO_x), and PM_{2.5}. Table 1 shows the criteria pollutant levels in tons per year from the Statewide Emissions Inventory.

Table 1. 1999 Criteria Pollutant Inventory (tons per year).

Area	PM ₁₀	PM _{2.5}	SO _x	NO _x	VOC	CO
Garfield	1,838	0.27	46	712	57,548	12,974
Kane	1,067	0	47	459	23,048	6,153
Utah Total	81,449	4,724	45,850	205,772	958,859	1,013,678
Utah Average	2,808	163	1,581	7,095	33,064	34,954

Source: UDAQ 1999 (Utah 1999 Statewide Emissions Inventory)

The greatest sources of air pollution emissions in Garfield and Kane Counties are area sources and on-road mobile sources. Area sources include small mobile and stationary sources such as gas stations or wood burning. Vehicles are the major source of on-road mobile emissions.

Native American tribal governments have the responsibility to develop, implement, and manage programs within tribal lands. The Clean Air Act authorizes eligible tribes to implement their own tribal air programs. Because tribes in Utah do not have approved Tribal Implementation Plans, the air resources comprising the surrounding Native American Reservations should be viewed as potentially sensitive areas.

The planning area is designated as either attainment or unclassified with respect to National Ambient Air Quality Standards for all criteria pollutants. The area is designated as Prevention of Significant Deterioration (PSD) Class II. The Paria Canyon-Vermilion Cliffs Wilderness, Box-Death Hollow Wilderness, and surrounding National Parks (Capitol Reef, Bryce Canyon, and Zion) are designated PSD Class I (Clean Air Act – 42 USC 7472 (a)). An additional Class I area in the vicinity is Grand Canyon National Park.

Any smoke emissions resulting from annual prescribed burning projects or treatments within the planning area are conducted and managed in compliance with guidelines found in the Utah Smoke Management Plan (SMP) and interagency group program. Active group participants include various federal and state agency land managers, as well as the UDAQ. The purpose of this program and the SMP is to ensure that mitigation measures are taken to reduce the impacts on public health, safety and visibility from prescribed fire and wildland fire used for resource benefits (UDAQ 2004). Compliance with the SMP is the primary mechanism for land managers to implement prescribed burns while ensuring compliance with the CAA. Burn plans written under this program include actions to minimize fire emissions, exposure reduction procedures, a smoke dispersion evaluation and an air quality monitoring plan. Proposed burns are reviewed on a daily basis by the program coordinator and burns are approved or denied based on current climatic and air quality conditions.

Regional haze has been an issue of growing concern throughout the west. Regional haze causes visual impairment by obscuring the clarity, color, texture, and form of what can be seen. As part of the Interagency Monitoring of Protected Visual Environments (IMPROVE) network, visual air quality in Bryce Canyon NP has been monitored using an aerosol sampler (1988 - present), and a 35mm camera (1984 - present). The 2004 Annual Performance Report on Air Quality Goals at National Parks reports measured trends over the past 10 years of data. The report indicates that the visibility trend in Bryce Canyon National Park is improving on the clearest days. The report did not indicate a visibility trend on hazy days.

Atmospheric deposition of air pollutants can increase acidity of soils and water resources. Measurements of atmospheric deposition are currently being taken in Class I areas of Grand Canyon National Park, Bryce Canyon National Park, and Canyonlands National Park by the National Acid Deposition Program. The 2004 Annual Performance Report on Air Quality Goals at National Parks indicates rates of atmospheric deposition of nitrogen and sulfur in rain is relatively low in Bryce Canyon National Park, but elevated above natural conditions. Trend analysis shows that nitrogen deposition has slightly increased while sulfur deposition has slightly decreased.

The lack of available data limits the forecasting trends of air quality; however, ambient air quality is not exceeding standards, visibility is typical of clear skies associated with remote areas in the western United States, and atmospheric deposition levels are below Federal levels of concern. Future changes to air quality conditions would occur according to the intensity and expansion or reduction of activities that produce air pollutants. However, the use of air pollution mitigation techniques can reduce emissions from sources, and in some cases, also minimize air quality impacts. At this time, future impacts to air quality within the planning area from non-BLM sources (such as power plants and fireplaces) are uncertain; however, emissions from these existing sources are not anticipated to increase.

Geology, Topography and Climate

Most of the planning area is located on the western edge of the Colorado Plateau physiographic province, with the northwestern reaches located in the Basin and Range/Colorado Plateau Transitional physiographic region (Stokes 1986). These two physiographic provinces are further broken into three

physiographic subunits—Southern High Plateaus, Grand Staircase, and Kaiparowits Plateau-Escalante Benches. The planning area's general surface geology is shown on Map 3.

Topography

The Colorado Plateau is a massive block of stratified rock that began to elevate during a tectonic mountain-building episode between 80 and 40 million years ago. The layers of rock in the Colorado Plateau are “virtually as level and undeformed as when they were deposited” (Stokes 1986). The Grand Staircase subunit of the Colorado Plateau is a series of cliffs and terraces that rise stratigraphically from the Grand Canyon in the south to high plateaus in Utah. A succession of cliffs form a massive staircase displaying some 250 million years of the earth's history. The series of cliffs, starting at the Grand Canyon, are Shinarump or Chocolate (Triassic), Vermilion (Triassic/Jurassic), White (Jurassic), Grey (Jurassic/Cretaceous), and Pink (Paleogene). Each step in the staircase is present in the planning area. Topographically, the stairstep relief results in a large increase in elevation from the planning area's southern edge (nearly 5,000 feet above sea level) to its northern edge (over 10,000 feet above sea level). The Kaiparowits Plateau-Escalante Benches subunit of the Colorado Plateau, like the Grand Staircase to the west, rises in elevation to the north, with trellis system of incised canyons cutting along and perpendicular to the northward elined geologic structures. The Kaiparowits Plateau consists primarily of Cretaceous age marine and non-marine sedimentary rocks. Older rock units within the subdivision define benches or terraces that border Glen Canyon and Paria Canyon on the south. Younger rocks are exposed in the pink cliffs that define the northern boundary of the subdivision. The decision area in the north is composed of scattered tracts of land between the Dixie National Forest and GSENM. On the south, the Paria Canyon-Vermilion Cliffs Wilderness occupies the southwestern corner of this subunit.

The Basin and Range/Colorado Plateau Transition Province is a broad belt between two major western physiographic provinces in which features of both provinces are evident (Stokes 1986). The Southern High Plateaus subunit of the Province is “the most extensive, relatively unbroken expanse of extrusive igneous rocks...capping much of the High Plateaus” (Stokes 1986 pp 249). The southern and eastern portions of the subunit are characteristic of the Colorado Plateau, while the western and northern landform in the Southern High Plateaus is more characteristic of the Basin and Range. The southernmost reaches of the subunit are characterized by outcrops of the Claron Formation and sharing of the pink cliffs of the Colorado Plateau's Grand Staircase subunit. The Southern High Plateaus within the planning area include most or all of the Markagunt Plateau, the Paunsaugunt Plateau, and the Aquarius Plateau. These plateaus are separated by the Sevier Fault (Sevier Valley) and the Paunsaugunt Fault (Johns Valley), respectively. Portions of the Tushar Mountains, the Sevier Plateau, and the Awapa Plateau are also found in the northern part of the planning area. The planning area ranges in elevation from 6,100 feet at the mouth of Circleville Canyon to 11,200 feet on the top of Boulder Mountain.

Mineral Occurrence

The presence and distribution of minerals in the planning area is controlled by the associated geology. The following section will address the major mineral occurrences within the planning area. More information concerning the planning area's geology and associated minerals can be found in the Mineral Potential Report for the Kanab Planning Area. This Report contains extensive information on the lithology, depositional settings, and stratigraphic relations of the rock units present within the planning area. The Report addresses geologic formations ranging from the Precambrian through the Tertiary, although only Permian-aged and younger rocks are exposed at the surface (BLM 2005e). In addition, the Report contains a description of the area's energy and mineral resources and potential for development.

Oil and Gas. An area with the geologic components required for oil and gas to be present and recoverable is identified as a “play”. The USGS defines an oil and gas play as a set of known or

postulated oil and (or) gas accumulations sharing similar geologic, geographic, and temporal properties, such as source rock, migration pathway, timing, trapping mechanism, and hydrocarbon type. Utilizing information from the USGS, four oil and gas plays have been identified within portions of the planning area. Many of the plays are hypothetical because they have no proven reserves or production history. The four oil and gas plays are:

- Late Proterozoic/Cambrian Play
- Paleozoic Devonian-Pennsylvanian Play
- Permo-Triassic Unconformity Play
- Cretaceous Sandstone Play

While it is possible that one deep well could test all five stratigraphic intervals of the plays, each play is considered as an individual target that will have separate, spatially isolated hydrocarbon accumulations that will need to be discovered on a play-by-play basis. In the Minerals Report, each play is treated individually because the overall differences between the plays mean that petroleum deposits in each reservoir may not necessarily be vertically superimposed. The Late Proterozoic/Cambrian Play and Cretaceous Sandstone Play (conventional gas) are rated moderate (M) for occurrence potential with a moderate (C) level of certainty. The Devonian-Pennsylvanian Play and the Permo-Triassic Play are rated high (H) for occurrence potential with a high (D) level of certainty.

Only limited exploration and development for oil and gas has occurred within the planning area. As of 2005, there is only one producing oil field, the Upper Valley field, which was discovered in 1964 (BLM 2005e). During development of this field, oil and gas resources were identified in several geologic formations, although production is predominantly from formations within the Permo-Triassic Unconformity Play. The Upper Permian Kaibab Formation is one of the primary oil-producing units at the Upper Valley field. Early development of the field also produced minor amounts of oil from the deeper Mississippian Redwall Limestone in the Paleozoic Devonian-Pennsylvanian Play (BLM 2005e). Wells into this formation are currently capped, but there is potential for further development and production.

In addition to the presence of conventional oil and gas, the potential for coal bed natural gas has been identified in the planning area. The presence of methane gas in coal seams has long been recognized, however, only recently some coals have been recognized as both a reservoir and source rock for this unconventional energy resource. In some geologic conditions, methane produced in coal beds can be extracted. New plays have been identified for areas prospective for coal bed natural gas. This group of coal bed natural gas plays, known as the Cretaceous Coal Bed Gas Plays, was defined by the UGS to cover potential reservoir areas of the coal-bearing Upper Cretaceous units of southcentral Utah (Dakota and Straight Cliffs Formations). Depths of the coal bed reservoirs in this group of plays range from 0 to about 6,000 feet. The Cretaceous Coal Bed Gas Play is rated moderate (M) for occurrence potential with a moderate (C) level of certainty.

Another related resource known as tar sands can be found on the eastern edge of the planning area. This deposit is a play along the Permo-Triassic unconformity that over time has been exposed to erosion allowing the volatiles from the oil and gas reservoir to escape, leaving a viscous tar like substance.

Coal. Beds of coal thick enough to be mined commercially occur in the Dakota Formation and Straight Cliffs Formation in the planning area (Doelling & Graham 1972; Doelling & Davis 1989). Areas within each field that have thick, shallow coal are rated high (H) for occurrence potential with a high (D) level of certainty. The deeper and thinner parts of each coal field are rated as high (H) for occurrence potential with a moderate (C) level of certainty.

The coals of the Dakota Formation (Alton and Kolob coal fields) and the Straight Cliffs Formation (Kaiparowits Plateau Coal Field) were deposited by a series of coalescing delta complexes derived from a westerly source. Local lenses and stringers of coal can be found in Triassic Chinle Formation in the planning area, but none are thick enough for commercial development.

There are two commercial coal zones in the Dakota Formation. These coal beds are as thick, but lower in heat content, and higher in ash and sulfur content than the coal beds mined from the Blackhawk Formation in the coal fields of central Utah. More information on the quality of the coal in these fields is contained in the Mineral Potential Report. The part of Alton coal field within the planning area contains a total of 1,278 million tons, of which 203 million tons (about 16 percent) is found at surface minable depths (Doelling & Graham 1972). The topography of the Kolob coal field in the decision area is steeper than the Alton area, resulting in little coal that is surface minable. Therefore, no surface minable resource was calculated, and all of the 1,360 million tons of coal in the part of the Kolob field within the planning area would probably have to be accessed by underground methods.

The Straight Cliffs coals are exposed on the eastern and western margins of the Kaiparowits Basin in the Escalante and Tropic areas respectively. The majority of these coals do not coincide with the decision area, although they occur within the planning area. They are thicker and more numerous on the eastern side of the Kaiparowits coal field near Escalante and thin to the west (BLM 2005e). The coal down to a depth of 3,000 feet is potentially minable, while the coal between 1,000 and 6,000 feet deep could be prospective for coal bed gas. The maximum measured total net coal thickness in the Straight Cliffs of the planning area is 100 feet in a drill hole north of the town of Escalante. While ash and sulfur levels of the analyzed portions of the Straight Cliffs formation are similar to those for coal currently mined from the Blackhawk Formation in central Utah, the moisture content is considerably higher and the heat content correspondingly lower. More information on the quality of the coal in these fields is contained in the Mineral Potential Report.

The Johns Valley area is an informally named coal-bearing area in Township 33 and 34 S, Range 2 W (Doelling and Davis 1978). Several drill holes in the southeast corner of section 33, Township 33 S, Range 2 W, penetrated an 18-foot-thick coal bed in the upper part of the Dakota at depths from 400 to 700 feet. Further wide-spaced drilling would be needed to define minable resources in the Johns Valley area.

Geothermal. While geothermal resources are not minerals, they are related to the area's geology. Geothermal energy is the heat that originates within the earth. With few exceptions, the higher temperature geothermal areas in Utah occur either in the Basin and Range province or within the Transition Zone. The Transition Zone coincides mainly with the Garfield County portion of the planning area, but extends slightly into the northern part of the Kane County. Identified geothermal areas are located mostly in western Garfield County within the Basin and Range and Transition Zone. Few low-temperature thermal springs occur within the planning area. Although some springs are in areas with geothermal indicators, such as young volcanic rocks and recent faulting, there are no identified geothermal temperature systems in the planning area.

Locatable Minerals. Several locatable mineral commodities occur throughout the planning area in small, sub-economic deposits, or as minor minerals associated with other mineral deposits. Minerals such as copper, chromium, lead, fluorine, manganese, mercury, silver, titanium, and zirconium could occur, but are minor occurrences that have no potential for future development in the next 15 years (as noted in the Mineral Potential Report). Minerals with deposits of significance are uranium and vanadium, antimony, limestone, gypsum and septarian concretions.

The principal uranium-vanadium hosts in the planning area are the Cretaceous Dakota Formation (and uppermost Carmel Formation), and the Shinarump Member of the Chinle Formation. Neither formation has large or high-grade deposits within the planning area. Two areas of potential Chinle Formation uranium-vanadium deposit occur within the planning area; one is in the southwestern part of the area, straddling U.S. Highway 89, and the second is in the northeast part of the area, on the west flank of the Teasdale anticline. Doelling and others (1989) report that only two small prospect pits were found in the southwestern area, and it is unlikely that new large, ore-grade deposits will be found in this area. At least five prospects have been opened on the Teasdale anticline Chinle deposits, but these deposits are generally lower grade than similar deposits found elsewhere in Utah. An area of very low grade uranium deposits, known as the Bulloch group of claims, is located on both sides of Orderville Gulch in the western portion of the planning area (Doelling and others, 1989).

The area of interest for antimony is situated in the northern section of the planning area in Antimony Creek Canyon. Antimony ore occurrences are found on both sides of the canyon for a distance of a little more than two miles and in Russell Hollow and Dry Wash about five miles north of Antimony Canyon.

Several geologic formations in the planning area contain limestone and dolomite, but limited information is known about their purity or utility. The two most important limestone-bearing units are the Carmel and Claron formations. Since limestone materials are common and widespread, a local market is necessary if they are to be economic. Probably little high-purity resource can be found (BLM 2005e).

Gypsum is abundant and widespread in the planning area; however, no deposits have been developed other than small mining operations for sculpting alabaster. The most important gypsum deposits are found in the Paria River Member of the Carmel Formation, which contains massive, white gypsum in beds from 3 to 30 feet thick that remain fairly consistent in thickness across much of the area (Doelling and others, 1989). In places the gypsum beds in the member have little cover making them suitable for surface mining; such places have the best potential for commercial development. Smaller beds of gypsum suitable for sculpting alabaster can be found in the Wiggler Wash Member of the Carmel.

Septarians are concretions or nodules of limestone or dolomite with calcite infilling that have formed in the Tropic Shale. Active mining is occurring northwest of Mt Carmel. The septarians are cut and polished to make a variety of gem figurings or larger objects such as bookends.

Salable Minerals. Several salable mineral commodities occur in the planning area in small, sub-economic deposits. The occurrence of diatomaceous earth and glass sand is noted here, but these commodities will not be discussed further because they are minor occurrences that have no potential for future development in the next 15 years (see Mineral Potential Report). The salable mineral deposits of significance are sand and gravel, stone, and clay. Certain collectable commodities such as petrified wood, septarian concretions, agate, jasper, and fossils also occur, but their removal would occur mainly as incidental activities that would not involve significant disturbance of the land surface.

Sand and gravel resources that meet construction specifications are not abundant in the planning area (BLM 2005e). There are seven main areas in the planning area that have been exploited for sand and gravel and have the best potential for future development: the Sevier River drainage, the East Fork of the Sevier River drainage, the upper Paria River drainage near Cannonville, the East Fork of the Virgin River drainage, the Johnson Wash drainage north of US Highway 89, the upper Escalante River drainage, and Wahweap Creek drainage near Big Water (BLM 2005e).

Beyond these main areas, there are several other areas that might contain exploitable sand and gravel. Unconsolidated Quaternary deposits are the chief sources of sand and gravel and there are many varieties of such deposits. Alluvium is found in stream channels or in the floodplains of streams; the Utah

Department of Transportation (UDOT) considers this material as sources of borrow only. Pediment gravels form caps on knolls, ridges, and benches and are the principal sources of gravel. Gravel in some of these deposits, however, does not meet wear or soundness specifications. Landslides scattered throughout the area contain too much clay and not enough gravel. Glacial deposits, such as moraines, till, and outwash, usually consist of boulders and clay. Locally they may contain beds of gravel. Aeolian deposits are principally dune sands which form potential borrow sources. Tertiary gravels and conglomerates are excellent sources of sand and gravel.

The Mineral Report considers four categories of stone: (1) crushed and broken stone, (2) building/dimension stone, (3) field stone, and (4) ornamental stone. Various rock units in the planning area are potential hosts for different types of stone deposits.

- Not all the rock in the geologic formations produce good crushed stone. The Paleozoic limestones would make the best material, but there are very limited exposures of these units. The intrusive igneous rocks would be adequate for many of the uses but would be more difficult to quarry. The primary crushed stone in the decision area comes from tertiary quartzite terrace gravels.
- Dimension stone is rock that is easily broken along planes of weakness such as bedding planes and inherent fractures or joints, so as to produce blocks, sheets, or slabs, which satisfy dimensional requirements. Several formations exposed in the planning area can provide suitable dimension stone, but there has been little to no production from most. There are areas of igneous intrusives that could provide an excellent source of granitic dimension stone. However, the use of stone from the planning area is not likely to occur unless there is a specific local need due to similar resources available in the metropolitan areas of northern Utah.
- Field stones are defined as cobbles, boulders, and rocks that can be used as is, or split and trimmed with little effort. Field stone has been utilized in Utah from the time the pioneers first began to build. Many formations have rock of suitable strength that could be used as field stone. This market is expanding with the growth to the area, but will remain minor unless a specialty material is found.
- Ornamental stone may be in crushed form, in dimension stone, or even in field stone condition, but must have the added feature of attractiveness. Most sandstone in the planning area is tinted with varying amounts of tan to brown staining. Sometimes they appear in interestingly mottled, banded, and even artistic patterns. It is observable in several formations, but probably best developed in the Navajo Sandstone, and Shinarump Member of the Chinle Formation near Kanab. Burnt shale (clinker) is quarried from areas in the Dakota Formation where coal beds have burned and baked the surrounding shale into a red gravelly material. The material is used as a decorative landscaping cover.

Clay, claystone, mudstone, or shale deposits have seen limited development and testing for quality in the planning area (Doelling, 1975; Doelling and others, 1989). Clay is present in several formations, especially the Chinle (Monitor Butte and Petrified Forest Members), Dakota, Tropic, Straight Cliffs, Claron, and in some volcanic units, but only a few localities have been examined specifically for clay. The clay-bearing units contain fairly thick and extensive clay deposits that can be used for general purposes.

Humate is derived from plant debris associated with carbonaceous shales or coals that were deposited in a swampy, continental environment. The most desirable feature of humate is its humic acid content, which is used to enhance soil productivity (BLM 2003e). In the planning area, humate deposits are found along the outcrop of the Cretaceous Dakota and Straight Cliffs Formations, which contains several thick intervals of carbonaceous shale and shaly coal. This humate interval occurs along the exposures of the Dakota Formation in the Alton and Kolob coal fields, primarily in Kane County, and the Straight Cliffs Formation, primarily in Garfield County. The topography of the Alton coal field is not as steep as the

other two coal fields and would likely have more extensive areas of humate development along the outcrop where the coal beds have not burned.

Climate

Climate is a characterization of the atmosphere over a long period of time, which takes into account temperature, precipitation and wind. Annual precipitation varies with elevation. In the higher northern portions of the planning area, precipitation varies from nine inches annually in the canyons and valleys to over 30 inches in the high mountains (Map 4). As the elevation decreases to the south, annual precipitation decreases to a more uniform 11 to 17 inches between Kanab and Zion National Park and only 5 to 7 inches in the Paria Canyon-Vermilion Cliffs Wilderness. The bulk of precipitation falls in the winter, leaving the summer months drier and the vegetation more prone to moisture deficiency due to high temperature, low humidity, and wind. A small increase in precipitation occurs during July and August when the summer “monsoons” pump moisture up from the south in the form of short duration-high intensity thunderstorms. Cycles of drought are a normal occurrence in the planning area. The variations in elevation and precipitation combine to produce varying climate zones. The average annual high temperature in Kanab is approximately 70° F and varies from 47° F in the winter to about 93° F in the summer. The average annual low temperature is about 39° F and ranges from 22° F in the winter to approximately 58° F in the summer.

Soil Resources

Many resources and resource uses depend on the presence of suitable quality soils for their sustainability and continued health; therefore, soil attributes and condition are important to BLM management decisions. Soil data is available for a limited portion of the decision area. In 1984, the Soil Conservation Service conducted a soil survey of the Panguitch area including parts of Garfield, Iron, Kane, and Piute Counties. The most recent soil survey in the region was conducted in 2003 in GSENM.

Rangeland Health Evaluations have been conducted throughout the decision area. The evaluation includes an assessment of soil condition indicators. The indicators include qualitative evaluations of an area's departure from anticipated ecological conditions, usually obtained from a representative site description. Some of the indicators include rills, gullies, soil surfaces resistance to erosion, compaction layers, evidence of wind erosion, and soil surface loss or degradation. Over 97 percent of the sites were classified as none to slight or slight to moderate departure from the site description. These evaluations indicate the landscape-level soil condition within the decision area is largely properly functioning, although there may be site-specific issues of soil impacts or degradation.

Some of the soils within the Kanab Field Office are prone to erosion. These soils usually have several intrinsic properties that make them “fragile” or susceptible to erosion. Such factors as high salt concentrations, fine or coarse textures, shallow depths, or steep slopes can contribute to a soil's erodibility. Soils derived from Tropic shale or from other saline sedimentary formations tend to be high in salts. High salt accumulations influence the availability of plant nutrients and water for plant growth. Because of the resultant sparse vegetative cover on these soils, soil particles may not be “anchored” in place and may easily be eroded by wind or water. Slope steepness also increases the erosion potential of soils because it increases the rate at which water will flow overland and transport soil particles. Many scientists (Soil Conservation Service 1984) identify slopes of 20-35 percent as potentially contributing to a severe erosion hazard. Soil texture contributes to the credibility of a soil as well. Fine textured soils such as clays or silty clays have slow infiltration rates and high runoff rates. As a result, rills and gullies are easily formed during storm events.

Biological soil crusts are recognized as having an influence on terrestrial ecosystems where they occur. These communities are referred to as cryptogamic, cryptobiotic, microbiotic or microphytic soil crusts. These crusts serve as a living mulch by retaining soil moisture and discouraging the growth of annual weeds. They can reduce wind and water erosion, fix atmospheric nitrogen into a form useable by plants, and contribute to the soil organic matter. These crusts can be used as indicators of ecological health, as well as indicators of physical disturbance. Biological soil crusts are on various soil surfaces throughout the decision area (USDOI 2001).

Total crust cover is inversely related to vascular plant cover, as less plant cover results in more surface available for colonization and growth of crustal organisms (USDOI 2001). When all crust types are combined (cyanobacterial, moss, lichen), cover is greatest at lower elevation inland sites (due to less vascular plant cover). Biological soil crusts within the decision area are mostly cyanobacteria (*Microcoleus*) and nitrogen-fixing lichens (*Collema*). These cyanobacteria and nitrogen-fixing lichens are generally limited and sparse in the decision area due to relatively high elevations (4,500 - 9,000 feet) and relatively dense vascular plant cover. Small areas of more dense soil crusts do exist within the decision area especially at lower elevation dry sites with less dense vegetative cover.

The importance of biological soil crusts is recognized by the scientific community and by BLM. However, science has not determined how much soil crust is needed in a certain soil type or ecological range site or woodland community so that ecological processes will operate in a healthy state (Curtis 2005). There is no clear biological crust yardstick to apply on a site-specific basis to allow sound and reasoned decisions on this subject to quantify the appropriate amounts and distribution of crusts.

The BLM's standard to assess the conditions of the public lands involves the use of ecological sites and woodland community descriptions developed for specific soil survey areas in accordance with standards established and developed by the National Resource Conservation Service, U. S. Department of Agriculture (NRCS). These ecological site descriptions generally do not contain specific information as to the quantities of cryptobiotic crusts that are expected to be on the site.

By definition, no prime farmland occurs on BLM land within the decision area. However, some areas could qualify as prime farmland were an adequate and dependable water supply available. Precipitation is inadequate and dependable irrigation water is lacking on BLM lands. Unique farmlands or additional farmlands of statewide or local importance have not been identified on BLM lands.

Water Resources

This section will address both surface and groundwater quality and quantity. Water resources are particularly important in the desert environment. BLM manages water resources both for resource values (watershed health, wildlife, riparian, etc) and resource uses (recreation, water supply, etc.) within the framework of applicable laws, regulations, and agency policies. The water resources traverse BLM-administered land and could be affected by BLM management activities; however, BLM has limited decision making authority for the resource.

Hydrology and Watershed

Watershed management is the protection, conservation, and use of the natural resources of a specific watershed in a manner that keeps the soil mantle in place and productive. Watershed management ensures that water yield and quality meet the desired uses. Watersheds can exhibit undesirable responses (e.g., severe flooding or erosion) to natural or human-caused disturbance. Surface disturbing activities could affect watershed health, which could increase erosion rates, sedimentation, and affect water quality.

Portions of the Lower Colorado, Virgin River, and Sevier River Basins are located within the planning area. Within these three basins there are 11 subbasins, or fourth order watersheds, and 31 fifth order watersheds. The fourth order watersheds are listed in Table 2 and shown on Map 5.

Table 2. Fourth Order Watersheds

Hydrologic Unit Code (HUC)	Watershed
14070001	Upper Lake Powell
14070003	Fremont
14070005	Escalante
14070006	Lower Lake Powell
14070007	Paria
15010003	Kanab
15010008	Upper Virgin
15010009	Fort Pierce Wash
16030001	Upper Sevier
16030002	East Fork Sevier
16030006	Escalante Desert

Source: USGS 2005a

Ground Water Quantity and Quality

Three Colorado Plateau aquifers underlie the planning area. These are the Mesaverde aquifer, the Dakota-Glen Canyon aquifer system, and the Coconino-De Chelly aquifer. Although the water quantity and quality in these aquifers are extremely variable, the aquifers are capable of yielding usable quantities of water with a water quality suitable for most agricultural or domestic use.

Groundwater quality is classified by the Utah Water Quality Board based primarily on the amount of total dissolved solids (TDS). Lower amounts of TDSs indicate higher water quality. The quality of the water in the Mesaverde aquifer is extremely variable. However, in the planning area, sparse data indicate that TDS concentration ranges from about 1,000 to 4,000 milligrams per liter. In general, areas of the Mesaverde aquifer that are recharged by infiltration from precipitation or surface-water sources contain relatively fresh water. The Dakota-Glen Canyon aquifer system underlies the majority of the planning area. The depth to the top of the Dakota-Glen Canyon aquifer system is approximately 2,000 feet. In general, where the aquifer system is less than 2,000 feet below land surface, TDS concentration of water in the aquifer is less than 1,000 milligrams per liter. In the planning area, the TDS concentration in water from the Coconino-De Chelly aquifer is approximately 1,000 milligrams per liter (USGS 2005b).

Groundwater recharge areas are vulnerable to surface sources of pollution because groundwater movement is generally pulled downward by gravity and primary recharge areas do not have protective layers to filter pollutants. Potential sources of groundwater pollution include agricultural operations, various types and methods of waste disposal, mining operations, and natural geologic conditions. Pollution related to natural geologic conditions is nearly impossible to control.

Surface Water Quantity and Quality

A stream is a general term for a body of flowing water. In hydrology the term is generally applied to water flowing in a natural channel as distinct from a canal. Streams in natural channels are classified as being perennial, intermittent or seasonal, or ephemeral (see Glossary).

Major rivers and streams in the planning area are the Escalante River, Colorado River, Kanab Creek, Sevier River, East Fork Sevier River, Paria River, and East Fork Virgin River. There are also numerous springs and small streams which are often diverted for livestock watering and irrigation. Most human use of the water from these rivers and streams is for agricultural purposes. Other beneficial uses are instream (recreation and fish habitat), culinary, irrigation and industrial purposes which vary over time, with more water being diverted during the vegetative growing season. Generally, as the water moves downstream and is diverted and used, the water quality deteriorates. The major sources of pollution are natural sedimentation from highly erosive substrates and man-caused non-point sources.

Water quality standards are set by the State of Utah according to Environmental Protection Agency (EPA) guidelines. These standards identify the uses for each water body and aquatic life support, and the scientific criteria supporting those uses. Pursuant to Section 303(d) of the Clean Water Act each state is required to identify water bodies not meeting state water quality standards. A total maximum daily load (TMDL) is calculated for water bodies not meeting water quality standards. This is the maximum amount of a pollutant that a water body can receive and meet water quality standards. A full list of the rivers, streams, lakes, and reservoirs within the decision area either having TMDLs completed or requiring TMDLs is found in Table 3.

Table 3. River and Stream Assessment Units Requiring a TMDL

Water Body Name	Water Body Description	HUC Unit	Causes
Upper Escalante	Escalante River and some tributaries from Boulder Creek confluence to Birch Creek confluence	14070005	Temperature
Paria River-1	Paria River from start of Paria River Gorge to headwaters	14070007	Salinity/TDS/chlorides
Paria River-3	Paria River and tributaries from Arizona-Utah Stateline to Cottonwood Creek confluence	14070007	Salinity/TDS/chlorides
Kanab Creek-2	Kanab Creek and tributaries from Reservoir Canyon to headwaters	15010003	Temperature
Upper Sevier	Sevier River and tributaries from Horse Valley Diversion upstream to Long Canal Diversion excluding Panguitch Creek, Bear Creek, and their tributaries; Sevier River and tributaries from Long Canal to Mammoth Creek confluence.	16030001	Total phosphorus, habitat alteration, and sediment.

Source: Utah DEQ Division of Water Quality 2004

Vegetation

Vegetation provides aesthetic appeal, as well as food and habitat for wildlife and livestock. Vegetation also provides root systems that help maintain soil integrity and reduce erosion (particularly on steep slopes and areas adjacent to waterways) and provides forest and woodland products. Many of BLM's land management policies are directed toward maintenance of healthy vegetation communities. Vegetation can generally be characterized by ecological provinces, and more specifically by communities and associations. The vegetation communities and associations discussed in this section comprise the major vegetation communities and associations in the decision area. Upland vegetation, riparian/wetland vegetation, and invasive species are discussed in this section. Special status plant species (T&E and sensitive species) are discussed in the Special Status Species section.

Ecological Provinces

The planning area is situated in the canyon, plateau, and desert areas of the Colorado Plateau physiographic province and corresponds with Bailey's description of the Colorado Plateau Semi-desert Province (313) (Bailey 1995). The Colorado Plateau Semi-Desert Province portion of the planning area has noticeable vegetation zones, however they lack uniformity.

Plant Communities and Associations

Plant communities and associations are groups of plant populations that coexist in space and time and directly or indirectly affect each other's population dynamics. Distinct plant communities are influenced by characteristics such as soil depth, texture, and salinity; climate variables, particularly temperature, total and seasonal distribution of precipitation, and wind; and topographic features, most importantly elevation, aspect and slope. The following discussions of plant communities that occur within the decision area show the diverse and complex nature of vegetation resources in the area.

Plant communities can be represented by plant cover types that reflect the dominant species present in an area, such as the plant cover types documented by the Southwest Regional Gap Analysis Project (SWReGAP) data. The SWReGAP is an update of the Gap Analysis Program's mapping and assessment of biodiversity for the five-state region encompassing Arizona, Colorado, Nevada, New Mexico, and Utah. The 43 SWReGAP land cover types were combined into nine vegetation cover types (Table 4 and Map 6) to better reflect BLM's management of vegetation communities and associations. Table 4 lists acres and percent of vegetation communities and associations in the decision area. Due to the dispersed nature, relatively small size and limited amount of riparian/wetland vegetation communities in the decision area, SWReGAP landscape level remote sensing is not an accurate method for their inventory or condition assessment. SWReGAP readings related to riparian/wetland are included in the various adjacent vegetation categories which are described in the categories' narratives below. Site-specific riparian/wetland inventories and assessments have been conducted throughout the decision area. Results of these inventories and assessments are discussed in the Riparian/Wetland section below. Each of the vegetation communities is discussed below.

Table 4. SWReGAP Vegetation Communities

Vegetation Communities or Association	Acres	% of Decision Area ¹
Aspen	350	<1
Other	710	<1
Mixed Conifer	970	<1
Ponderosa Pine	4,200	1
Oak/Mountain Shrub	13,600	2
Desert Scrub	22,600	4
Non-Vegetated	40,300	7
Sagebrush Steppe	141,100	25
Pinyon-Juniper Woodland	330,400	60
Total	554,230	100

1. Rounded to nearest %

Source: USGS 2004a (SWReGAP data)

Upland Vegetation

Aspen

Quaking aspen (*Populus tremuloides*) is the most widely distributed tree in North America. Although it has limited distribution in the decision area, it is an important vegetation community because of its value for wildlife habitat and high species diversity.

Aspen provides habitat for a wide variety of wildlife needing young forests, including black bear, deer, elk, ruffed grouse, and a number of smaller birds and animals. Compared to conifer forests, aspen forests allow more surface water and/or groundwater recharge and streamflow because of their lower seasonal water losses to interception and transpiration. Aspen stands produce abundant forage that amounts to as much as 1,000 to 2,500 pounds per acre (1100 to 2800 kilograms per hectare) in the Rockies annually, or three to six times more than typical conifer stands. These amounts are comparable to forage production on some grasslands. Because of low fuel accumulations, aspen stands have low flammability and make excellent firebreaks (Little 1971).

Aspen may have a canopy cover of 30 to 60 percent. Canopy openings and mesic conditions allow lush understory vegetation to exist. Mountain snowberry (*Symphoricarpos oreophilus*) canopy cover ranges from 10 to 40 percent and is usually the dominant shrub in this association. Other understory vegetation includes Gambel oak (*Quercus gambelii*) and wood's rose (*Rosa woodsii*). Aspen seedlings may also be present but usually contribute less than 5 percent of woody species cover. Herbaceous cover is variable, but generally dominated by bluegrass (*Poa pratensis*) and aspen bluebells (*Mertensia arizonica*). Blue wildrye (*Elymus glaucus*) and other wheat grasses may also be present as well as exotics (USGS 2004b).

Other

This category describes an aggregation of areas with small unconsolidated vegetation types that do not fit under other vegetation classifications. These areas may include sites planted for ungulate grazing or watershed protection, as well as small disturbed areas such as community pits.

Mixed Conifer

Mixed conifer vegetation communities within the planning area are dominated by two associations — white fir (*Abies concolor*) and Douglas fir (*Pseudotsuga menziesii*). Mixed conifer vegetation communities and associations are found within the planning area at elevations ranging from 5,000 to 8,500 feet. This mesic vegetation community generally occurs on steep, lower slopes and benches with northern aspects, and in narrow canyons and ravines. Its soils are generally deep, coarse textured alluvium. Mixed conifer vegetation communities include upper montane/subalpine riparian forests, shrublands and herbaceous riparian areas. These riparian areas are linear or patches confined to specific environments occurring on floodplains or terraces of rivers and streams. Shrubs found in these areas include, thinleaf alder (*Alnus incana*), water birch (*Betula occidentalis*), red-osier dogwood (*Cornus sericea*), coyote willow (*Salix exigua*), yellow willow (*S. lutea*), and mountain willow (*S. moniticola*) (Rondeau 2001, Welsh et al 1993). Understory conditions vary widely from dry, open-canopy forests with grassy undergrowth on open slopes and ridges to moist, closed-canopied stands dominated by numerous herbaceous plants in the canyons and ravines.

The white fir association is well-represented in the planning area, but is only slightly represented within the decision area. In the white fir association, white fir is well-represented in the tree canopy with heights averaging 60 to 80 feet. The subcanopy is dominated by bigtooth maple (*Acer grandidentatum*) and other species contributing 30 to 70 percent total subcanopy and canopy cover, which may include Douglas fir, black maple (*Acer negundo*), and Gambel oak (*Quercus gambelii*). Subshrubs include creeping mahonia (*Mahonia repens*), mountain lover (*Paxistima myrsinites*), and mountain snowberry (*Symphoricarpos oreophilus*). The herbaceous layer may be diverse, but does not contribute significant groundcover.

In the mixed conifer Douglas fir association, Douglas fir is the prominent species in the canopy layer represented by few to several mature trees. Mature western juniper (*Juniperus scopulorum*) is likely to be represented in the subcanopy by young trees and seedlings. At some sites, the subcanopy is dominated by Gambel oak (*Quercus gambelii*). The canopy and subcanopy species combined provide high foliar cover. Herbaceous cover is sparse and commonly represented by mesic forest species, starry false Solomon's seal (*Maianthemum stellatum*), Fendler's meadow rue (*Thalictrum fendleri*), and bracken fern (*Pteridium aquilinum*) (USGS 2004b).

Ponderosa Pine

Ponderosa pine (*Pinus ponderosa*) is the most widely distributed pine species in North America, ranging north-south from southern British Columbia to central Mexico and east-west from central Nebraska to the west coast (Little 1971). In climax forests, ponderosa pine stands often contain many small, even-aged groups rather than a true uneven-aged structure. Interior ponderosa pine or shrub communities in central and southern Utah are usually the lowest coniferous forest type, and border shrublands or Colorado pinyon-Utah juniper (*Pinus edulis-Juniperus osteosperma*) woodland. Dominant understory species include curleaf mountain-mahogany (*Cercocarpus ledifolius*), greenleaf manzanita (*Arctostaphylos patula*), black sagebrush (*Artemisia nova*), Gambel oak (*Quercus gambelii*), and mountain snowberry (*Symphoricarpos oreophilus*). Ponderosa pine and mountain muhly (*Muhlenbergia microsperma*) mainly occur in central and southern Utah (Youngblood and Mauk 1985).

In ponderosa pine forests, timber production, livestock grazing, and recreation are the typical land uses, although no timber production occurs in the decision area. Ponderosa pine forests are found at low elevations offering year-round recreation, and provide habitats for various wildlife species. Snags in the mature pine forest provide a large number of species with nesting and roosting sites. Big game, such as deer and elk, also use the pine forests for food and shelter (Howard 2003).

Oak/Mountain Shrub

There are two types of mountain shrub communities within the planning area —mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and mixed mountain shrub. Their distribution depends on soil type, aspect, and elevation. Mountain big sagebrush communities extend from the upper edge of the pinyon-juniper woodlands to 10,000 feet. The soil is usually well-drained, shallow, coarse-textured and rocky. Mountain big sagebrush seldom exceeds four feet in height. On protected, north-facing slopes with sufficient soil moisture, aspen will invade, which in turn may be succeeded by shade-tolerant conifers.

Associated with mountain big sagebrush are rabbitbrush (*Chrysothamnus* ssp.), bitterbrush (*Purshia tridentata*), and snowberry (*Symphoricarpos longiflorus*). Grasses are usually abundant. Grasses, shrubs, and forbs associated with mountain big sagebrush include bluebunch wheatgrass (*Elymus spicatus*), thickspike wheatgrass (*Elymus lanceolatus*), needle and thread grass (*Stipa comata*), muttongrass (*Poa fendleriana*), sandberg bluegrass (*Poa secunda*), sheep fescue (*Festuca ovina*), mountain low rabbitbrush (*Chrysothamnus viscidiflorus lanceolatus*), arrowleaf balsamroot (*Balsamorhiza sagittata*), and lupine (*Lupinus* spp.)

The mixed mountain shrub community is found in elevations ranging from 7,000 to 8,500 feet. It is typically found on soils with dark-colored surface horizons where roots can grow deep. This community is more diverse on protected slopes where the force of the wind is moderated. Common shrubs include true mountain mahogany (*Cercocarpus montanus*), Utah serviceberry (*Amelanchier utahensis*), chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpos longiflorus*), mountain big sage (*Artemisia tridentata* ssp. *vaseyana*), squawbush (*Rhus trilobata*), squaw current (*Ribes cereum*), and Mormon tea (*Ephedra* spp.). Common grasses and forbs include needle and thread (*Stipa comata*), mutton grass (*Poa fendleriana*), junegrass (*Koeleria macrantha*), mountain brome (*Bromus carinatus*), fescue grasses (*Festuca* spp.), arrowleaf balsam root (*Balsamorhiza sagittata*), scarlet gilia (*Gilia aggregate*), and lupine (*Lupinus* spp.).

Desert Scrub

Desert scrub vegetation communities range from southeastern Oregon into Utah and Nevada where annual precipitation is usually below 10 inches (25 cm). Typically, this vegetation community and associations occupy the driest regions of the planning area. Structural and compositional variations in this habitat are related to changes in salinity and fluctuations in the water table and can be described as occurring in two vegetation associations — saltbush and salt desert shrub.

The saltbush vegetation association is perhaps the most arid vegetation type in the intermountain West (Knight 1994). These areas are characterized by accumulations of salt in poorly developed deep soils. Soils in these areas usually have a pH of 7.8 to 9, which restricts the uptake of water by all but the most salt-tolerant plants (halophytes). Halophytes function essentially to redistribute salts from the soil depths to the surface, thereby concentrating salts around the perimeter of the plant. This enables the plant to eliminate competition for scarce water and nutrients from other less salt-tolerant plants (Goodin and Mozafar 1972).

The salt desert shrub association is characterized by drought tolerant shrubs, with few grasses and forbs in the understory. The soils in these areas are shallow saline clays and loams. Typical shrubs in these vegetation types are shadscale (*Atriplex confertifolia*), four-wing saltbush (*Atriplex canescens*), spiny hopsage (*Grayia spinosa*), greasewood (*Sarcobatus vermiculatus*), winterfat (*Krascheninnikovia lanata*), broom snakeweed (*Gutierrezia sarothrae*) and bud sagebrush (*Picrothamnus desertorum*) (USGS 2004b).

Desert scrub areas also include greasewood flats-ephemeral wet meadows. These can be large patches defined by hydrologic regime, soil salinity and texture. Shrubs and grasses associated with these areas include salt grass, (*Distichlis spicata*), common spikerush (*Eleocharis palustris*), alkali sacaton (*Sporobolus airoides*) and greasewood species (*Sarcobatus spp.*).

Non-Vegetated

Non-vegetated lands consist of areas with less than 30 percent vegetation cover. These areas include lava outcrops, canyon cliffs, and sparsely vegetated sand dunes. Volcanic areas are mostly exposed rock (usually greater than 90 percent of the groundcover with sparse alpine vegetation). These areas are typically less than an acre and are mostly located at upper elevations in the northeast portion of the field office.

Lava outcrops occur throughout the intermountain west and are limited to non-vegetated and sparsely vegetated volcanic substrates (generally less than 10 percent plant cover) such as basalt lava, basalt dikes, and basalt cliff faces with associated loose deposits of rock debris (USGS 2004a).

Colorado Plateau cliffs, talus slopes, and canyons are in foothills to subalpine elevations and include non-vegetated and sparsely vegetated landscapes (generally less than 10 percent plant cover) of steep cliff faces, narrow canyons, and smaller rock outcrops of various igneous, sedimentary rocks. The Colorado Plateau cliffs and canyons are largely composed of exposed bedrock (usually sedimentary) and scree; whereas the Rocky Mountain cliffs and canyons are composed of various igneous, sedimentary, and metamorphic rocks (USGS 2004a).

Active and stabilized sand dune areas are primarily located in the southwestern portion of the decision area. These sand areas have sparse to moderate vegetation adapted to unstable coarse sands (USGS 2004a). The soil supporting vegetation is unconsolidated windblown sand on active dunes. The surrounding habitat is either vegetated, stabilized sands, sandstone slickrock, or various exposed shales and other fine grained exposed geologic rock types or their finer grained developed soils. Plants associated with these sand dunes include sand mulesears (*Wvethia scabrida var. attenuata*), blowout grass (*Redfieldia flexuosa*), sand dropseed (*Sporobolus cryptandrus*) giant dropseed (*Sporobolus giganteus*), Indian ricegrass (*Achnatherum hymenoides*) sandhill muhly (*Muhlenbergia pungens*) silky sophora (*Sophora nuttalliana*), Kanab yucca (*Yucca kanabensis*), rubber rabbitbrush (*Chrysothamnus nauseosus*), winged wild-buckwheat (*Eriogonum alatum*), and Ponderosa pine (*Pinus ponderosa*), pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), and Welsh's milkweed (*Asclepias welshii*) (USFWS 1992).

Sagebrush Steppe

Sagebrush steppe vegetation communities and associations are common in Utah, Washington, Oregon, Idaho, and adjacent Wyoming, and Nevada. Sagebrush steppes are mostly found at elevations between 2,000 and 6,000 feet. Sagebrush steppe is a major vegetation community in the decision area and is usually interspersed with pinyon-juniper woodlands and desert scrub vegetation communities.

Shrubs typically provide 10 to 60 percent of the vegetation cover in undisturbed conditions, whereas shrub cover varies between 10 and 30 percent. Vegetation structure in this community is characterized by an open shrub layer over a moderately open to closed bunchgrass layer. The more productive sites generally have a denser grass layer and sparser shrub layer than more xeric sites. The bunchgrass layer may contain a variety of forbs. Sagebrush steppe vegetation communities generally have relatively little exposed bare ground, and mosses and lichens may carpet the area between taller plants. Moist sites may support tall bunchgrasses greater than 3.3 feet or rhizomatous grasses (IBIS 2004).

Characteristic and dominant mid-tall shrubs in the shrub-steppe habitat include basin sagebrush (*Artemisia tridentata* ssp. *tridentata*), Wyoming sagebrush (*A. t. ssp. wyomingensis*), mountain sagebrush (*A. t. ssp. vaseyana*), antelope bitterbrush (*Purshia tridentata*), and silver sagebrush (*A. cana*). Each of these species can be the only shrub or appear in complex seral conditions with other shrubs. Rabbitbrush (*Chrysothamnus viscidiflorus*) and short-spine horsebrush (*Tetradymia spinosa*) are common associates and often dominate sites after disturbance. Big sagebrush occurs with the shorter stiff sagebrush (*A. rigida*) or low sagebrush (*A. arbuscula*) on shallow soils or high elevation sites (IBIS 2004).

Pinyon-Juniper Woodland

Pinyon-juniper woodlands are the most widely distributed and largest vegetation community in the decision area. This community generally occurs on a variety of slopes and aspects and its soils are usually coarse-texture, calcareous alluvium derived from sandstone and shale. There are significant amounts of bare ground, litter, and desert pavement at the soil surface (USGS 2004b).

Health and related density of pinyon and juniper vary widely within the decision area; however, canopy densities over 50% occur over large areas. In healthy pinyon and juniper communities height ranges from 15 to 30 feet. The vegetation is dominated by Utah juniper (*Juniperus osteosperma*) with sagebrush (*Artemisia* spp.) dominating the sparse to moderately dense short-shrub layer. Other shrubs, such as fourwing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), Mormon tea (*Ephedra* spp.), rubber rabbitbrush (*Ericameria nauseosa*), broom snakeweed (*Gutierrezia sarothrae*), prickly pear (*Opuntia* spp.), or cliffrose (*Purshia* spp.) may be present with low percent cover. The sparse to moderately dense herbaceous layer is dominated by graminoids, such as indian ricegrass (*Achnatherum hymenoides*), three-awn (*Aristida* spp.), grama (*Bouteloua* spp.), threadleaf sedge (*Carex filifolia*), bottlebrush squirreltail (*Elymus elymoides*), needle-and-thread grass (*Hesperostipa comata*), galleta (*Pleuraphis jamesii* (*Hilaria jamesii*)), western wheatgrass (*Pascopyrum smithii*), Sandberg's bluegrass (*Poa secunda*), bluebunch wheatgrass (*Elymus spicatus*), dropseed (*Sporobolus* spp.), and introduced annuals including cheatgrass (*Bromus tectorum*). Associated forbs may include fringed sagebrush (*Artemisia frigida*), buckwheat (*Eriogonum* spp.), carpet phlox (*Phlox hoodii*), and Purshe's plantain (*Plantago patagonica*) (USGS 2004b).

Pinyon-juniper woodlands areas also include lower montane riparian woodlands. These are linear areas or patches occurring primarily in the lowest elevations. The areas are dependant on the natural hydrologic regime and flooding and are often found near wet meadows. Shrubs associated with these riparian areas include skunkbrush (*Rhus aromatica* var. *trilobata*), and narrowleaf willow (*Salix exigua*) (Rondeau 2001, Welsh et al 1993).

Riparian/Wetland

Wetland areas (Map 7) are defined by Federal policy as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and which, under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. BLM Technical Reference 1737 (Riparian-Wetland Area Management) includes marshes, shallow swamps, lakeshores, bogs, wet meadows, and riparian areas as wetlands. Riparian areas are further defined by BLM Technical Reference 1737 as a form of wetland transition between permanently saturated wetlands and uplands areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along or adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, and shores of lakes and reservoirs with stable water levels are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

Even though riparian and wetland areas only occupy a small percentage of land, they provide a wide range of functions critical to different wildlife species, water quality, scenery, and recreation (Brimson 2001). The distribution of riparian and wetlands areas is documented on SWReGAP vegetation maps, National Wetland Inventory maps, and on decision area specific maps of wetland (lentic) and stream (lotic) resources. The SWReGAP vegetation cover types associated with riparian and wetlands areas are grass or forb dominated wetland, forested wetlands, and shrub dominated wetlands. The 70.64 miles and 385.54 acres of riparian and wetland areas within the decision area occur primarily in the Sevier River, East Fork Virgin River, and Kanab Creek drainages. Wetlands are afforded protection under EO 11990 (wetland protection) and EO 11988 (floodplain management) and section 404 of the Clean Water Act.

Riparian areas in the decision area are dominated by wetland species such as Fremont cottonwood (*Populus fremontii*), velvet ash (*Fraxinus velutina*), box elder (*Acer negundo*), or the introduced tamarisk (*Tamarix chinensis*) and Russian olive (*Elaeagnus angustifolia*). Riparian and wetland areas may be dominated by herbaceous or shrub species such as baltic rush (*Juncus balticus*), Nebraska sedge (*Carex nebraskensis*) seepwillow (*Baccharis emoryi*), or sandbar willow (*Salix exigua*). Some of these riparian forests and woodlands lack understories or are dominated by nonnative species (USGS 2004b).

The Riparian-Wetland Initiative for the 1990's (BLM 1991a) and the *Utah Standards for Rangeland Health* (BLM 1997) establish goals and objectives for managing riparian-wetland resources. The ecological condition of riparian-wetland areas is measured using proper functioning condition (PFC) assessments. Proper functioning condition assessments are a consistent approach for considering hydrology, vegetation, and erosion/deposition (soils) attributes and processes to assess the condition of riparian-wetland areas (USDOI 1998; USDOI 1999). PFC is a qualitative assessment based on quantitative science to determine how well a riparian-wetland area's physical processes are functioning. Proper functioning condition is a state of resiliency that allows an area to produce desired values, such as fish habitat, neotropical bird habitat, or forage, over time. Riparian-wetland areas that are not functioning properly cannot sustain these values. Table 5 shows the existing condition and trend of the decision area's riparian-wetland areas. While more than 28 miles (more than 39 percent of assessed mileage) of riparian-wetland miles are functioning at risk, only 1.2 miles are in a downward trend and most are improving in condition. Over 233 acres (60 percent of assessed acres) of riparian-wetland acres are in proper functioning condition. Of all assessed riparian-wetland acreage, approximately 16 acres (4.2 percent of assessed acres) are non-functioning or functioning at risk in a downward trend. Of all assessed riparian-wetland mileage, approximately 7 miles (10.2 percent of assessed mileage) are non-functioning or functioning at risk in a downward trend.

Table 5. Decision Area Riparian Condition

Functional Status	Trend	Miles Evaluated	% of Miles Evaluated	Acres Evaluated	% of Acres Evaluated
Non Functioning	N/A	6	8.5	5.83	1.5
Functioning at Risk	Downward	1.2	1.7	10.3	2.7
	Static	1.99	2.8	9.05	2.3
	Static to Upward	1.75	2.5	23.25	6.0
	Upward	21.15	29.9	90.75	23.5
	Unknown	2	2.8	10.2	2.6
Proper Functioning Condition	N/A	36.22	51.3	233.16	60.5
Unknown	N/A	.33	.5	3	.8
Total		70.64	100	385.54	100

Source: Kanab Field Office Annual Riparian-Wetland Report

Invasive Species/Noxious Weeds

Nineteen species of State or County listed noxious weeds are currently known to occur within the boundary of the planning area (in Kane and Garfield Counties). Weed infestations usually occur on disturbed areas where native vegetation has been significantly or totally removed (i.e. road sides, livestock trails, reservoir sites, and flood damaged areas). Noxious weeds and invasive species often exclude other vegetation, reducing species diversity. If unrestricted, noxious weeds and invasive species may threaten to occupy additional acreage of public and private lands. BLM is required by law to control noxious weeds (Federal Noxious Weed Act of 1974 [PL 93-629] as amended).

The field office works closely with the Color Country Cooperative Weed Management Area (CWMA) in Kane and Garfield Counties to identify and monitor infested areas and determine needed control methods. Active control measures are taken on the following species on public lands: Scotch thistle (approximately 1,000 acres in Kane County), Musk thistle (approximately 500 acres in Panguitch Valley), Spotted knapweed (less than 10 acres in Kane County) and hoary cress (less than 10 acres in Panguitch Valley). These acreages are generally small dispersed populations and not normally concentrated together (contiguous). The primary method of control has been spraying with herbicides and hand grubbing as most infestations are small. Table 6 shows acres of weed treatments throughout the decision area for the past five years. The increase in acres in FY 2002 was due to the identification of new populations, not the expansion of existing infestations. Due to treatments, noxious weed populations are stable.

Table 6. Acres of Weed Treatments

Fiscal Year (FY)	Acres Treated
FY00	1,000
FY01	1,000
FY02	1,552
FY03	1,500
FY04	1,500

Source: Kanab Field Office Files

Table 7 lists the common name and scientific name of noxious weeds listed by the Utah State Department of Agriculture and Food for Garfield and Kane Counties. The distribution and extent of areas with noxious weed populations are well documented.

Table 7. Utah Noxious Weed List

Common Name	Scientific Name
Bermuda grass	<i>Cynodon dactylon</i>
Canada thistle	<i>Cirsium arvense</i>
Diffuse knapweed	<i>Centaurea diffusa</i>
Dyers woad	<i>Isatis tinctoria L</i>
Field bindweed	<i>Convolvulus arvensis</i>
Hoary cress	<i>Cardaria drabe</i>
Johnsongrass	<i>Sorghum halepense</i>
Leafy spurge	<i>Euphorbia esula</i>
Medusahead	<i>Taeniatherum caput-medusae</i>
Musk thistle	<i>Carduus mutans</i>
Perennial pepperweed	<i>Lepidium latifolium</i>
Perennial sorghum	<i>Sorghum halepense L & sorghum alnum</i>
Purple loosestrife	<i>Lythrum salicaria L.</i>
Quackgrass	<i>Agropyron repens</i>
Russian knapweed	<i>Centaurea repens</i>
Scotch thistle	<i>Onopordum acanthium</i>
Spotted knapweed	<i>Centaurea maculosa</i>
Squarrose knapweed	<i>Centaurea squarrosa</i>
Yellow starthistle	<i>Centaurea solstitialis</i>

Source: Utah Department of Agriculture and Food 2005

In addition to the listed noxious weeds, there are several plant species considered undesirable that occur in the planning area. A plant is usually labeled undesirable when it presents a poisoning threat to livestock. Some undesirable plants occur as part of the natural vegetative community. Others invade or increase as a result of poor rangeland conditions. It is not feasible to attempt control of most undesirable species as they are common and widespread; however, livestock management techniques can be employed to prevent or minimize livestock losses. Regionally, locoweed (*Astragalus spp.*) has accounted for most of the reported livestock poisonings. Locoweed is an episodic problem. Years when it is abundant prior to other range forage species greenup, it can become a problem to livestock. Considerable calf crop loss to locoweed poisoning occurred in Utah in 1993 and 1994. Other livestock losses have been attributed to death camas (*Zigadenus spp.*), rubberweed (*Hymenoxys spp.*), cocklebur (*Xanthium strumarium*), whorled milkweed (*Asclepias subverticillata*), and Gambel oak (*Quercus gambelii*).

Changes to the above list occur as new plant species become problems. It should be noted that a species' absence from the list does not mean that the species is not considered in management decisions. For example, even though cheatgrass is not identified the above list, it has become a management concern throughout the region. Once cheatgrass is established on a site over just a few cycles of seed production

and dispersal, the seed bank can contain two or three times as many viable cheatgrass seeds as there are established plants in the community (Zouhar 2003). Cheatgrass invasion may be accelerated by disturbance, but disturbance is not required for cheatgrass establishment. Cheatgrass can also thrive in areas that have little or no history of cultivation or grazing by domestic livestock. It may establish in these relatively undisturbed areas when seed disperses from nearby patches and establishes on sites of small natural disturbances, such as where rodents or predators dig in the soil (Zouhar 2003). Cheatgrass is more of a concern on the southern half of the decision area. In Garfield County, cheatgrass invasion and spread is limited due to long cool springs and higher elevations.

Special Status Species (Threatened, Endangered, and Sensitive)

These species are animals and plants that require specific management attention as a result of population or habitat concerns. The four categories of these species are —

- Federally Listed Threatened and Endangered (T&E) Species and Designated Critical Habitats
- Federally Proposed Species and Proposed Critical Habitats
- Federal Candidate Species
- BLM Sensitive Species

Federally listed species can have critical habitat identified as crucial to species viability. For those species that are listed and have not had critical habitat designations identified for them, BLM cooperates with the United States Fish and Wildlife Service (USFWS) to determine and manage habitats of importance. The mission of the USFWS is to work with other federal, state, and local agencies to conserve, protect, and enhance fish, wildlife, and plants species and their habitats. Protective measures for migratory birds are provided in accordance with the Migratory Bird Treaty Act of 1918 and Bald Eagle Protection Act of 1940. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act (1934).

BLM has entered into an MOA with the USFWS to improve the efficiency and effectiveness of RMP-level Section 7 consultation processes under the ESA. Through this MOA, BLM agrees to promote the conservation of candidate, proposed, and listed species and to informally and formally consult on listed and proposed species and designated and proposed critical habitat during planning to protect and improve the condition of species and their habitats to a point where their special status is no longer necessary.

Threatened and Endangered Species

BLM will continue to implement actions that will further the management, protection, and recovery of listed and non-listed special status plant and animal species. BLM accomplishes this management through coordination with the USFWS and the Utah Division of Wildlife Resources (UDWR). BLM will initiate Section 7 consultation with USFWS before approving or implementing any action that may affect listed species or designated critical habitat. Habitat for these species will be managed in such manner that actions authorized, funded, or carried out by BLM do not contribute to the need for the species to become listed under the Endangered Species Act. Table 8 identifies the Federally listed animal and plant species in the decision area. It should be noted that although suitable habitat may be present, some of these species may not be known to actually occur within the decision area.

Table 8. Federally Listed Animal and Plant Species

Common Name	Scientific Name	Status
Birds		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
California Condor	<i>Gymnogyps californianus</i>	Experimental
Mexican Spotted Owl	<i>Strix occidentalis</i>	Threatened
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	Candidate
Mammals		
Utah Prairie Dog	<i>Cynomys parvidens</i>	Threatened
Invertebrates		
Kanab Ambersnail	<i>Oxyloma Kanabense</i>	Endangered
Coral Pink Sands Dunes Tiger Beetle	<i>(Cicindela Limbata Albissima)</i>	Candidate
Plants		
Autumn Buttercup	<i>Ranunculus aestivalis</i>	Endangered
Siler Pincushion Cactus	<i>Pediocactus sileri</i>	Threatened
Welsh's Milkweed	<i>Asclepias welshii</i>	Threatened

Source: USFWS 2005

Bald Eagle (*Haliaeetus leucocephalus*), the national symbol of the United States, was first protected under the Bald Eagle Protection Act of 1940 then later listed as an endangered species in most of the lower 48 states in 1966 and again in 1973. Since the species was listed in 1973, the bald eagle population has clearly increased in number and expanded in range throughout the conterminous 48 States. During a survey in January 2002, approximately 22 bald eagles were counted along the Sevier River within Kane and Garfield Counties, 17 adults and 5 immatures (BLM 2002). The increase is a direct result of the banning of DDT and other persistent organochlorines, habitat protection, and other recovery efforts. In 1995 the USFWS reclassified the bald eagle under the ESA from endangered to threatened in the lower 48 states (Federal Register 50 CFR, Part 17, Vol. 60, No 133).

The bald eagle is found throughout Utah more often during the winter than summer. Habitat consists of communal winter roosting habitat and foraging habitat within the planning area. Feeding areas, diurnal perches, and night roosts are fundamental elements of bald eagle winter range. In Utah, eagles nest in mature cottonwoods. Wintering habitat exists within both Garfield and Kane Counties. Fish and waterfowl are the primary sources of food for bald eagles, but they will also feed on rabbits, carrion, and small rodents.

California condor (*Gymnogyps californianus*) was listed as endangered on March 11, 1967 and noted to only occur in California. On October 16, 1996, the USFWS announced plans to reintroduce California condors into northern Arizona and southern Utah and designate these birds as nonessential experimental populations as provided by Section 10j of the ESA. Federal Register Notice vol. 61, No. 201, pages 54044 to 54060 further directs the establishment of a nonessential experimental population of California condors in northern Arizona. The purpose of the reintroduction was to achieve a primary recovery goal—the establishment of a second noncaptive population, spatially separated from the noncaptive population in southern California.

There are no known California condor nesting or roosting sites within the decision area. Recent surveys have identified roosting sites next to Zion National Park on the Kolob Terrace adjacent to the decision area (Parish 2005). Access to these roosting sites would likely require the California condor to fly over the decision area.

California condors are among the largest flying birds in the world. Adults weigh as much as 22 pounds. They are black except for prominent white underwing linings and edges of the upper secondary coverts. Condors are opportunistic scavengers, feeding only on carcasses. Since European settlement of California, condor populations have steadily declined. Poisoning, shooting, egg and specimen collecting, collisions with manmade structures, and loss of habitat contributed to the decline of the species. By 1987, the last wild condor was captured and taken to the San Diego Wild Animal Park. Beginning with the first successful breeding of California condors in 1988, the population (in 1996) was 121, including 104 in the captive flock, and 17 in the wild. Nonessential experimental status of this condor population places the following requirements on Federal agencies: (1) that agencies use their authorities to conserve the condors and (2) for the purposes of Section 7 consultation, they are treated as if they are proposed for listing, therefore BLM will informally confer with the USFWS on actions likely to jeopardize the continued existence of the condor (50 CFR Part 17; FR vol. 61, No. 201, pages 54044 to 54060).

Mexican Spotted Owl (*Strix occidentalis lucida*) was listed as a threatened species on April 15, 1993 (USFWS 1993). The range of the Mexican spotted owl extends from the southern Rocky Mountains in Colorado and the Colorado Plateau in central and southern Utah, southward through Arizona and New Mexico and into northern Mexico. Mexican spotted owls primarily forage at night with their diet consisting of a variety of mammals, birds, reptiles and insects with mammals making up the bulk of the diet throughout the owls' range. Wood rats, voles, and gophers are the primary mammal food base. Steep slopes and canyons with rocky cliffs characterize much of the owl's habitat in the planning area (Map 8).

A recovery plan was completed for the Mexican spotted in 1995 (USFWS 1995) and a revised recovery plan is currently being developed. Threats to Mexican spotted owls include habitat loss associated with human disturbance.

Designated critical habitat was established for this species in 2001 and revised in 2004 (USFWS 2004). There are 47,700 acres of designated critical habitat in the decision area, located on the decision area's western boundary adjacent to Zion National Park and southeast of Tropic (see Map 8). However, not all of these acres contain the primary constituent elements of habitat as described in the recovery plan. The critical habitat designation clarified that areas within critical habitat boundaries are only considered critical when they contain or have the potential to contain habitat characteristics essential to the conservation of the species. For canyon habitats, the primary constituent elements include one of more of the following attributes: 1) cooler and often more humid conditions than the surrounding area, 2) clumps or stringers of trees and/or canyon wall containing crevices, ledges or caves, 3) high percent of ground litter and woody debris, and 4) riparian or woody vegetation. The primary constituent elements related to forest structure include: 1) a range of tree species, 2) a shade canopy created by the tree branches covering 40 percent or more of the ground, and 3) large dead trees with a trunk diameter of at least 12 inches (Federal Register 69 CFR 53181-5398).

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is listed as an endangered species. It breeds primarily in the southwestern United States and winters in Central America and southern Mexico. Within Utah, the southwestern willow flycatcher is found in the southern and eastern parts along riparian zones of the Colorado Plateau. Current range limits of the Southwestern willow flycatcher in Utah are not definitively known (Bosworth 2003). Critical habitat is in the process of being designated. Potentially suitable habitat for this species exists in Garfield and Kane Counties; however, it is anticipated that the designated critical habitat will be along the Virgin River in Washington County, outside the decision

area. The species is rare in southern Utah during the summer and is usually found in riparian habitats, especially in areas of dense willows associated with rivers and wetlands (Bosworth 2003). The majority of the dense willow stand riparian areas are in narrow canyons that are prone to flashflooding. These conditions limit the ability of the habitat to support nesting birds. The major factor in the decline of the flycatcher is likely the alteration or loss of its essential riparian habitat (UDWR 2005a).

Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*) are considered a riparian obligate and are usually found in large tracts of dense cottonwood or willow habitats (below 33 ft) (UDWR 2005a). The riparian areas in the decision area may provide habitat for this species. Population status and trends within the decision area are unknown; however, birds have been documented adjacent to the planning area in Iron, Washington and San Juan Counties since 1983 (Bosworth 2003). Yellow-billed cuckoo nesting behavior may be closely tied to food abundance. Yellow-billed cuckoos are one of the latest migrants to arrive and breed in Utah; they arrive in extremely late May or early June and breed in late June through July (Parrish et. al. 2002). Nesting habitat is classified as dense lowland riparian characterized by a dense sub-canopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within 333 feet of water (UDWR 2005a). Threats to the species include the alteration of riparian corridors from invasive species, improper livestock management, and development (Bosworth 2003).

Utah Prairie Dog (*Cynomys parvidens*) was listed as an endangered species under the ESA, as amended on June 4, 1973. On May 29, 1984, the prairie dog was reclassified as a threatened species (49 Federal Register 22330-22334). Historically, the Utah prairie dog was found in southwestern and central Utah. The habitat of a prairie dog consists of continuous grassland and other vegetation on flat plains. The Utah prairie dog is found at elevations from 5,400 feet on valley floors up to 9,500 feet in mountain mesa habitats. Three Utah prairie dog recovery areas have been established. One of these areas, the Paunsaugunt Recovery Area, is within the planning area. In 2002, eight Utah prairie dog complexes were reported in this recovery area on combined BLM, state, and private lands (BLM 2005a).

The prairie dog lives both above- and underground. The most obvious feature of a prairie dog colony is the abundance of mounds and holes. Utah prairie dog habitat has been recorded in the northwest portion of the decision area (BLM 2003a). Major threats to the species include habitat loss (through development and drought), poisoning, and the plague. Prairie dogs are susceptible to several diseases that lead to their rapid decline and even disappearance of entire colonies.

A recovery plan was completed for the species in 1991 (USFWS 1991). A Utah Prairie Dog Interim Conservation Strategy was completed in 1997 (Instruction Memorandum [IM] UT 2002-040). A current management practice for the prairie dog is a translocation program. Translocation of prairie dogs is authorized by the USFWS under the ESA, as amended. It is anticipated that translocations will be a major part of the future management of the Utah prairie dog. No critical habitat has been designated for the Utah prairie dog.

Kanab Ambersnail (*Oxyloma Kanabense*) was first collected in 1910 and listed as Endangered in 1992. The gastropod has been reported from 2 localities in Utah, both in extreme southern Kane County: the larger population, reported to be extant, is located at Three Lakes; a much smaller population, reported as seemingly extirpated, occurred in Kanab Creek Canyon (UDWR 1999a). Although this species occurs within Kane County, there are no known individuals within the decision area. All known locations are on private land. This species is a wetland snail and habitat includes wet ledges with rocks and cypripediums associated with spring-fed lakes, marshes and pools. However, UDWR surveyed potential habitat and only found Kanab Ambersnail in areas with standing water and wet substrate (UDWR 2000a). The main threats to this species are habitat loss through development and habitat degradation (dewatering of the habitat through water diversion) as well as direct destruction of the snails through trampling (UDWR 1999a).

Coral Pink Sands Dunes Tiger Beetle (*Cicindela Limbata Albissima*) is a rare insect that only occurs in portions of the Coral Pink Sand Dunes of Kane County in southern Utah. Over 90 percent of the known population is located within the Coral Pink Sand Dunes State Park. It is currently a Candidate species for Federal listing. The Coral Pink Sand Dunes tiger beetle is a subspecies of the tiger beetle. It has striking coloration; the large, wing cases are predominantly white and much of the body and legs are covered in white hairs (BLM 2001). The total adult population estimate for 2004 was 757 with a 95 percent confidence range of 600 to 914. The 2004 population was up from the 2003 estimate of 595 but lower than the 2002 estimate of 2,944 (Knisley and Gowan 2005).

A conservation plan was developed for the Coral Pink Sand Dunes Tiger Beetle in 1997. The conservation plan consists of two parts. The first part focuses on land management within Coral Pink Sand Dunes Tiger Beetle habitat in order to prevent the need for Federal listing under the ESA. The second part is a conservation strategy and agreement that identifies conservation and management objectives. The conservation strategy established conservation areas, directed continued monitoring and research of the tiger beetle, promoted conservation of the dune ecosystem and enhancement of tiger beetle populations, and created a public education program (BLM 2004c).

Autumn Buttercup (*Ranunculus aestivalis*) is a Federally listed endangered plant that is a narrow endemic to (it occurs only in) the Sevier River Valley, Garfield County, Utah. The species is found only on private land within the planning area and there is no known occurrence on BLM-administered lands. A member of the buttercup family, this species is a finely pubescent, upright perennial herb. It is typically 30 to 60 cm tall, and its twice ternately divided leaves are largely in a basal cluster. Autumn buttercup produces abundant yellow flowers that can be seen from late-July to early October. It is found in low, herbaceous, wet meadow communities on islands of drier peaty hummocks, and sometimes in open areas, at elevations ranging from 6,360 to 6,450 feet. The species' habitat has been much reduced from pre-settlement times by the diversion of water for irrigation and the introduction of domestic grazing animals. There are currently only two small populations of the Autumn buttercup known to exist (UDWR 2005a).

Siler Pincushion Cactus (*Pediocactus sileri*) was first listed on October 26, 1979 and is currently designated as Threatened. Within the area covered by this listing, this species is known to occur primarily on BLM lands in Arizona and within Kane County and Washington County, Utah. The Kane County population may be the most viable of all the populations currently under study in Utah and Arizona. This cactus is restricted to a specific soil type and has a very restricted range in desert shrub communities. The mean annual number of individuals in the decision area was 122 plants over a five-year study period (Hreha and Meyer 2000).

Threats to this species include disturbance from OHV use, livestock, insecticide spraying, and possibly mining. In addition, species decline has resulted from private collectors and commercial suppliers (USFWS 1979 & Hreha and Meyer 2000).

Welsh's Milkweed (*Asclepias welshii*) is a Federally listed threatened plant that occurs in Kane County, Utah. This species is known to occur only in the Coral Pink Sand Dunes and in the Sand Hills 8 miles to the northeast of the Coral Pink Sand Dunes. Monitoring has occurred on this species since 1989. Monitoring in 2003 indicated a 15 percent increase in total stem counts from 2002 (Esplin 2003). The plants grow on both the tops and sides of the dunes. Critical habitat is designated and a recovery plan has been developed. Critical habitat includes about 4,000 acres of sand dune habitat in the Coral Pink Sand Dunes and the Sand Hills area. The 2000 Vermillion MFP amendment addresses further management and protection of this species.

Sensitive Species

This category of species includes those that are on the Utah BLM State Director's Sensitive Species list. For sensitive animal species, this list includes those identified by BLM and the State of Utah Division of Wildlife Resources. The State of Utah does not maintain an official sensitive plant species list. Table 9 lists the sensitive species in the decision area. These species are managed as necessary to protect them and their habitat from loss in accordance with FLPMA and BLM guidelines, and Federal Government directives. It should be noted that these species may or may not be known to occur within the decision area. Following the table, narratives provide a brief description of each sensitive species and its habitat.

Table 9. Sensitive Animal and Plant Species

Common Name	Scientific Name	BLM Status	UDWR Status
Amphibians			
Arizona Toad	<i>Bufo microscaphus</i>	Sensitive	Wildlife species of concern
Reptiles			
Desert Night Lizard	<i>Xantusia vigilis</i>	Sensitive	Wildlife species of concern
Birds			
Ferruginous Hawk	<i>Buteo regalis</i>	Sensitive	Wildlife species of concern
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	Sensitive	Wildlife species of concern
Long-Billed Curlew	<i>Numenius americanus</i>	Sensitive	Wildlife species of concern
Burrowing Owl	<i>Athenecunicularia</i>	Sensitive	Wildlife species of concern
Short-Eared Owl	<i>Asio flammeus</i>	Sensitive	Wildlife species of concern
Black Swift	<i>Cypseloides niger</i>	Sensitive	Wildlife species of concern
Lewis' Woodpecker	<i>Melanerpes lewis</i>	Sensitive	Wildlife species of concern
Three-Toed Woodpecker	<i>Picoides tridactylus</i>	Sensitive	Wildlife species of concern
Northern Goshawk	<i>Accipiter gentilis</i>	Sensitive	Conservation agreement species
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Sensitive	Wildlife species of concern
Mammals			
Fringed Myotis	<i>Myotis thysanodes</i>	Sensitive	Wildlife species of concern
Western Red Bat	<i>Lasiurus blossevillii</i>	Sensitive	Wildlife species of concern
Spotted Bat	<i>Euderma maculatum</i>	Sensitive	Wildlife species of concern
Townsend's Big-Eared Bat	<i>Corynorhinus townsendii</i>	Sensitive	Wildlife species of concern
Allen's Big-Eared Bat	<i>Idionycteris phyllotis</i>	Sensitive	Wildlife species of concern
Big Free-Tailed Bat	<i>Nyctinomops macrotis</i>	Sensitive	Wildlife species of concern
Pygmy Rabbit	<i>Brachylagus idahoensis</i>	Sensitive	Wildlife species of concern
Fish			
Bonneville Cutthroat Trout	<i>Oncorhynchus clarki utah</i>	Sensitive	Conservation agreement species
Leatherside Chub	<i>Gila copei</i>	Sensitive	Wildlife species of concern
Roundtail Chub	<i>Gila robusta</i>	Sensitive	Conservation agreement species
Bluehead Sucker	<i>Catostomus discobolus</i>	Sensitive	Conservation agreement species
Flannelmouth Sucker	<i>Catostomus latipinnis</i>	Sensitive	Conservation agreement species

Common Name	Scientific Name	BLM Status	UDWR Status
Plants			
Lori's columbine	<i>Aquilegia loriae</i>	Sensitive	Not Applicable
Gumbo milkvetch	<i>Astragalus ampullarius</i>	Sensitive	Not Applicable
Escarpment milkvetch	<i>Astragalus stratiflorus</i>	Sensitive	Not Applicable
Meager camissonia	<i>Camissonia exilis</i>	Sensitive	Not Applicable
Hole-in-the-Rock prairie-clover	<i>Dalea flavescens epica</i>	Sensitive	Not Applicable
Utah spurge	<i>Euphorbia nephradenia</i>	Sensitive	Not Applicable
Cataract gilia	<i>Gilia latifolia imperialis</i>	Sensitive	Not Applicable
Paria iris	<i>Iris pariensis</i>	Sensitive	Not Applicable
Zion Jamesia	<i>Jamesia americana zionis</i>	Sensitive	Not Applicable
Claron pepperplant	<i>Lepidium montanum claroense</i>	Sensitive	Not Applicable
Cutler's lupine	<i>Lupinus caudatus cutleri</i>	Sensitive	Not Applicable
Chinle evening primrose	<i>Oenothera murdockii</i>	Sensitive	Not Applicable
Kane breadroot	<i>Pediomelum epipsilum</i>	Sensitive	Not Applicable
Sandloving penstemon	<i>Penstemon ammophilus</i>	Sensitive	Not Applicable
Cronquist phacelia	<i>Phacelia cronquistiana</i>	Sensitive	Not Applicable
Atwood's pretty phacelia	<i>Phacelia pulchella atwoodii</i>	Sensitive	Not Applicable
Chinle chia	<i>Salvia columbariae argillacea</i>	Sensitive	Not Applicable
Kanab thelypody	<i>Thelypodopsis ambigua erecta</i>	Sensitive	Not Applicable
Tropic goldeneye	<i>Viguiera soliceps</i>	Sensitive	Not Applicable
Pinnate Spring Parsley	<i>Cymopterus beckii</i>	Sensitive	Not Applicable
Alcove bog-orchid	<i>Habenaria zothecina</i>	Sensitive	Not Applicable

Note: These species may occur within the overall area of Kane and Garfield Counties; however, they may or may not be present within the decision area.

Sources: UDWR 2005b; BLM IM-UT-2003-027 (BLM Sensitive Plant Species List for Utah, August 2002)

Amphibians

Arizona toad (*Bufo microscaphus*) is present within Kane County. This species inhabits streams, washes, irrigated crop lands, reservoirs, and uplands adjacent to water. The Arizona toad lays eggs on the bottoms of shallow, slow-moving streams. The diet of adults consists mainly of insects and snails, whereas larvae (tadpoles) consume plant matter and organic debris (UDWR 2005b).

Reptiles

Desert Night Lizard (*Xantusia vigilis*) is present within Garfield County. The desert night lizard is found in arid and semiarid rocky areas. Habitat consists of concealing, protective vegetation, such as yuccas and agaves, as well as rock crevices, and dead brush. The desert night lizard eats a variety of insects and other small invertebrates (UDWR 2005b).

Birds

Ferruginous Hawk (*Buteo regalis*) are distributed throughout most of the state of Utah. Productivity in Ferruginous hawks is directly correlated with the available prey base such as jack rabbits. Due to the cyclic nature of jack rabbit populations, Ferruginous hawks may experience similar population booms and

crashes. Breeding Ferruginous hawks rely on grassland or shrubsteppe terrain and, in many parts of Utah, nest on the ecotone between these habitats and pinyon-juniper woodlands (UDWR 2005b).

Greater Sage-grouse (*Centrocercus urophasianus*) populations are documented in both Garfield and Kane Counties (UDWR 2002). Greater sage-grouse inhabit sagebrush plains, foothills, and mountain valleys. The greater sage-grouse is an herbivore and insectivore, and is associated with both tall and short sagebrush types. Sagebrush, understory of grasses and forbs, and associated wet meadow areas are essential for optimum habitat. Sage-grouse use the same breeding ground or “leks” for several consecutive breeding seasons (UDWR 2005b). There are two known leks in the decision area and three known leks on adjacent lands. Habitat within the planning area could contain additional leks.

Long-Billed Curlew (*Numenius Americanus*) are present within both Garfield and Kane Counties. The Great Basin comprises a significant portion of their overall range and has been described as an area of great importance in maintaining breeding populations of long-billed curlews. Foods taken are diverse, including crustaceans, mollusks, worms, toads, the adults and larvae of insects, and sometimes berries. Long-billed curlews nest on the ground in dry grasslands where sufficient cover and abundant prey exist (UDWR 2005b).

Burrowing Owl (*Speotyto cunicularia*) prefer open areas within deserts, grasslands, and sagebrush steppe communities. Both primary and secondary breeding habitat exists in Garfield and Kane Counties. Habitat consists of well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground such as moderately or heavily grazed pasture. Burrowing owls breed in pastures, hay fields, fallow fields, road and railroad rights-of-way, and in a number of urban habitats. They mainly eat terrestrial invertebrates, but also consume a variety of small vertebrates, including small mammals, birds, frogs, toads, lizards, and snakes (UDWR 2005b).

Short-Eared Owl (*Asio flammeus*) are present in both Garfield and Kane Counties. In Utah, short-eared owls are distributed over most of the state, though they are less wide-spread today than historically. The short-eared owl is an open country, ground-nesting species that occupies grasslands. Populations of short-eared owls are largely dependant on the abundance of small mammals, such as voles, for prey (UDWR 2005b).

Black Swift (*Cypseloides niger*) habitat is present in Kane and Garfield Counties. No known confirmed breeding locations are within Kane or Garfield Counties. Black swifts require waterfalls for nesting. Typically the falls are permanent but may be intermittent if they flow throughout the breeding season. Black swifts are colonial nesters and may nest in groups of less than 10 pairs near and often behind waterfalls at elevations from 6,000 to 11,500 feet. Foraging flocks, often associated with swallows or other swifts, may occur several miles from the nest site. Black swifts are aerial insectivores and feed exclusively on aerial insects (Parrish et. al. 2002).

Lewis’ Woodpecker (*Melanerpes lewis*) is present in both Kane and Garfield Counties. Lewis’ woodpecker is a habitat specialist with primary breeding habitat in ponderosa pine and open riparian areas. Winter habitat includes open woodlands and lowland riparian areas. Lewis’s woodpecker is a cavity nester which nests in dead or dying trees, often using previously excavated holes. The diet of the Lewis’s woodpecker is primarily composed of insect prey during the breeding season and nuts and berries during the fall and winter (UDWR 2005b).

Three-toed woodpecker (*Picoides tridactylus*) is a permanent resident of coniferous forests above 8,000 feet. The species is fairly easily observed in the Uinta Mountains and in areas of the Cedar Breaks National Monument. This species may be very common in areas associated with spruce bark beetle

infestations and may nest in loose colonies; they play an important role in controlling such insect outbreaks (UDWR 2005b).

Northern Goshawk (*Accipiter Gentilis*) is present within both Kane and Garfield Counties. The northern goshawk prefers mature mountain forest and riparian zone habitats. Nests are constructed in trees in mature forests; often nests previously used by northern goshawks or other bird species are re-used. Northern goshawks cruise low through forest trees to hunt, and may also perch and watch for prey. Major prey items include rabbits, hares, squirrels, and birds (UDWR 2005a).

Grasshopper Sparrow (*Ammodramus savannarum*) In Utah, the grasshopper sparrow is primarily limited to the northernmost region of the state in conjunction with native grassland and fields enrolled in the Conservation Reserve Program (CRP). However, potential breeding habitat for the species does exist in Kane and Garfield Counties. The grasshopper sparrow is dependent on dry grassland, a habitat that is increasingly threatened by human development and conversion to cropland (UDWR 2005b).

Mammals

Fringed Myotis (*Myotis thysanodes*) occurs in Kane and Garfield Counties. Fringed myotis use caves, mine tunnels and buildings for day and night roosts; they roost in tightly packed clusters. They are sensitive to human disturbances, especially when in maternity colonies. Important habitat areas for this species are lowland riparian areas and water courses (UDWR 2005b).

Western Red Bat (*Lasiurus blossevillei*) is very rare in Utah and is sparsely distributed within north-central, central, and southwestern regions of the state. Western red bat roosts in the foliage of cottonwood trees and is dependent on broad leaf shrubs and trees in lowland riparian zones below 5,700 feet elevation. Loss of riparian habitat is the main threat to Western red bat (UDWR 2005b).

Spotted Bat (*Euderma maculatum*) is considered rare in Utah. Spotted bat can occupy many habitats but is most frequently found in dry, rough, desert terrain with roosts in rock crevices and under loose rocks or boulders (UDWR 2005b).

Townsend's Big-Eared Bat (*Corynorhinus townsendii*) occurs throughout Utah in caves, abandoned mines, and occasional buildings. They are generally limited to elevations below 9,000 feet. Threats to Townsend's big-eared bat are mainly loss of habitat through human disturbance and mine closure (UDWR 2005b).

Allen's Big-Eared Bat (*Idionycteris phyllotis*) occurs in Kane County. Allen's big-eared bats occur in riparian woodlands of cottonwood and willow to forested mountain areas of pine and oak. The species is also found in pinyon-juniper habitat or salt-cedar. Breeding colonies are generally located in mine tunnels and boulder piles and are susceptible to human disturbance (UDWR 2005b).

Big Free-Tailed Bat (*Nyctinomops macrotis*) is relatively rare in Utah, and its distribution is considered highly fragmented. Big free-tailed bats inhabit rugged, rocky terrain and roost in rock crevices, and occasionally in caves, buildings, and tree holes. The wing morphology of big free-tailed bat necessitates a vertical drop for it to achieve flight, requiring very specific location sites for roosts (UDWR 2005b).

Pygmy Rabbit (*Brachylagus idahoensis*) occurs in isolated patches in the western half of Utah. The species requires deep soils for burrowing, and tall, dense sagebrush for cover and food. Threats to pygmy rabbit include increased fire frequency, agriculture, human encroachment, overgrazing and sagebrush removal projects (UDWR 2005b).

Fish

Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) is a State Conservation species. The decision area contains approximately five miles of historic habitat. However, no current habitat exists within the decision area, therefore this species will not be discussed further.

Bonneville Cutthroat Trout (*Oncorhynchus clarki utah*) occurs in approximately 3 miles of one stream within the decision area (in western Garfield County) although historically they occupied approximately 19 miles of stream. Bonneville cutthroat trout can be found in a number of habitat types from high mountain streams and lakes to low-elevation grassland streams, all with a healthy riparian zone providing structure, cover, shade and bank stability. Bonneville cutthroat trout consumes primarily insects and small fish in the case of larger individuals. Major threats are habitat loss, predation by other nonnative fish, and hybridization (UDWR 2005b).

Leatherside Chub (*Gila copei*) is endemic to the Bonneville Basin drainage. The species occurs in Utah Lake and Sevier River drainages with introduced populations in the Colorado River Basin. Leatherside chub occur in pools and low-velocity runs of creeks and small to medium sized rivers. Substrate requirements are coarse fines with lower percentages of sand-silt and gravel. Leatherside chub can live up to five years, can grow to six inches, and spawn in the summer. Threats to this species include loss of habitat diversity from erosion, channelization, and riparian vegetation loss, predation from nonnative fish, stream dewatering, and stream barriers causing population fragmentation (UDWR 2005b).

Roundtail Chub (*Gila robusta*) is found in Garfield and Kane Counties. Spawning occurs from March to May. Roundtail chub requires rocky runs, rapids, and pools in creeks, small to large rivers, and large reservoirs in the upper Colorado River system. Roundtail chub eats aquatic and terrestrial insects, snails, crustaceans, fishes, and sometimes algae. Threats to roundtail chub include nonnative fish, habitat loss, and sedimentation (NatureServe 2005).

Bluehead Sucker (*Catostomus discobolus*) is found in Kane and Garfield Counties. The species feeds on algae from bottom of stream substrate. Bluehead sucker inhabit large rivers and mountain streams in variable turbidity and temperature (NatureServe 2005).

Flannelmouth Sucker (*Catostomus latipinnis*) is found in Kane and Garfield Counties. Flannelmouth sucker is a bottom feeder, consuming algae, other fragmented vegetation, seeds and invertebrates. The species lives within moderate to large rivers. Flannelmouth sucker is threatened by nonnative species, hybridization, habitat alteration and blockage of migration routes (NatureServe 2005).

Plants

Lori's columbine (*Aquilegia loriae*) is in the buttercup family and is endemic to Kane County; however there are no known plants within the planning area. The only known locations are within GSENM. The species can be found in moist canyon walls, wash bottoms and sand seeps in the Straight Cliffs, Moenave, Navajo and possibly the Kaiparowits sandstone formations near ponderosa pine and oak communities (Utah Native Plant Society 2005).

Gumbo milkvetch (*Astragalus ampullarius*) is located within Arizona and within Kane and Washington Counties, Utah. Habitat for this plant species is located in mixed desert shrub and juniper communities with clay soils (Utah Native Plant Society 2005).

Escarpment milkvetch (*Astragalus stratiflorus*) is endemic to Arizona and Kane and Washington Counties, Utah. Habitat for this plant species is composed of interdune valleys, sandy depressions on

ledges and terraces in streams channels, pinyon-juniper, ponderosa pine and sandy desert shrub communities from 4,900 to 6,600 feet in elevation (Utah Native Plant Society 2005).

Meager camissonia (*Camissonia exilis*) is endemic to western Kane County. Habitat for this plant species is composed of sagebrush, galleta and pinyon-juniper communities from 5,000 to 6,900 feet in elevation (Utah Native Plant Society 2005).

Hole-in-the Rock prairie-clover (*Dalea flavescens epica*) is limited to a few counties within Utah, and is present in both Kane and Garfield Counties. Habitat for the species is composed of sandstone bedrock, sandy areas in blackbrush and mixed desert shrub in elevations of 4,700 to 5,000 feet (Utah Native Plant Society 2005).

Utah spurge (*Euphorbia nephradenia*) is endemic to Utah and is present in both Kane and Garfield Counties. There are no known plants within the decision area, although there is habitat. Habitat for this species includes mat-saltbush, blackbrush, ephedra, and mixed sandy desert shrub communities, mainly in Tropic Shale and Entrada formations. The species can be found in elevations of 3,800 to 4,800 feet (Utah Native Plant Society 2005).

Cataract gilia (*Gilia latifolia imperialis*) is endemic to Utah and is present in Kane and Garfield Counties. There are no known plants within the decision area, although there is habitat. Habitat for the species is composed of shadscale and other mixed desert shrub communities. Cataract gilia can be found at elevations of 3,800 to 5,200 feet (Utah Native Plant Society 2005).

Paria iris (*Iris pariensis*) can be found in Kane County, Utah; however, the species has not been located anywhere for several years. Habitat for this species is composed of grass-shrub communities at elevations of 4,600 feet (Utah Native Plant Society 2005).

Zion Jamesia (*Jamesia americana zionis*) is endemic to Zion Canyon and may be found in Kane County, Utah. Habitat for the species is composed of pinyon-juniper, oak and ponderosa pine communities, in hanging gardens, sandstone crevices and cliff sides. The species can be found at elevations 4,200 to 6,000 feet (Utah Native Plant Society 2005).

Claron pepperplant (*Lepidium montanum claroense*) is endemic to Paunsaugunt and Table Cliff Plateaus of Utah. The species can be found in Kane and Garfield Counties. Habitat for the species is limited to sagebrush, pinyon-juniper, ponderosa pine and bristlecone pine communities. The species is usually found on fine texture substrates such as the Wasatch Limestone formation and at elevations of 6,400 to 8,000 feet (Utah Native Plant Society 2005).

Cutler's lupine (*Lupinus caudatus cutleri*) is endemic to Utah and can be found along the Cockscomb within Kane County. There are no known plants found within the decision area, although there is habitat. Habitat for this species is limited to pinyon-juniper communities at 5,150 feet in elevation (Utah Native Plant Society 2005).

Chinle evening primrose (*Oenothera murdockii*) is endemic to Utah and can be found within Kane County. There are no known plants in the decision area, although there is habitat. Known locations are within GSENM. Habitat for this species is limited to pinyon-juniper communities on red-purple or gray clay silty barrens of the Chinle and possibly the adjacent Moenkopi formations. The species can be found at elevations of 4,400 to 5,600 feet (Utah Native Plant Society 2005).

Kane breadroot (*Pediomelum epipsilum*) is endemic to the Colorado Plateau in Kane County, Utah. Habitat for this species is composed of pinyon-juniper woodland and desert shrub communities on the Chinle and Moenkopi formations at elevations of 4,000 to 5,500 feet (Utah Native Plant Society 2005).

Sandloving penstemon (*Penstemon ammophilus*) is endemic to both Kane and Garfield Counties of Utah. Habitat for this species is comprised of blow sand derived from Navajo sandstone. In addition, habitat is composed of ponderosa pine and mixed shrub communities of 5,900 to 7,200 feet in elevation (Utah Native Plant Society 2005).

Cronquist phacelia (*Phacelia cronquistiana*) is endemic to western Kane County, Utah. There are no known plants in the decision area, although there is habitat. Known locations are within GSENM. Habitat for the species is limited to clay outcrops in sagebrush, ponderosa pine and pinyon-juniper communities. The species can be found at elevations of 6,300 to 6,900 feet (Utah Native Plant Society 2005).

Atwood's pretty phacelia (*Phacelia pulchella atwoodii*) is endemic to western Kane County, Utah. There are no known plants found within the decision area, although there is habitat. The species occurs in pinyon-juniper, oak, sagebrush, and serviceberry communities on Moenkopi and Carmel derived soils. The species is limited to elevations of 5,100 to 5,500 feet (Utah Native Plant Society 2005).

Chinle chia (*Salvia columbariae argillacea*) is endemic to western Kane County, Utah. There are no known plants found within the decision area, although habitat is present. The species is limited to sparsely vegetated pinyon-juniper communities on fine textured saline clay soils and "gypsum boils" on the Chinle formation. The species can be found on alluvium or colluvium slopes at elevations of 4,250 to 5,600 feet (Utah Native Plant Society 2005).

Kanab thelypody (*Thelypodopsis ambigua erecta*) is endemic to Kane County, Utah. The species is limited to pinyon-juniper and desert shrub communities on clay soils derived from purple Chinle shales. The plant can be found at elevations of 5,000 to 5,400 feet (Utah Native Plant Society 2005).

Tropic goldeneye (*Viguiera soliceps*) is endemic to Kane County, Utah. There are no known plants within the decision area, although there is habitat. The species is limited to mat saltbush communities on clay knoll and bluffs on Tropic Shale and Chinle formations. The species is limited to elevations of 4,600 to 4,800 feet (Utah Native Plant Society 2005).

Pinnate Spring Parsley (*Cymopterus beckii*) is endemic to San Juan and Wayne Counties. However, the Utah BLM State Director's Sensitive Plant Species List also notes it as present in Garfield County. There are no known plants within the decision area, although there is habitat. The species is limited to sandy or stony places, pinyon-juniper-mountain brush, ponderosa pine-manzanita, conifer-oak, and Douglas fir communities. The species is limited to elevations of 5,575 to 7,050 feet (Utah Native Plant Society 2005).

Alcove bog-orchid (*Habenaria zothecina*) is listed on the Utah BLM State Director's Sensitive Plant Species list for Garfield County. There are no known plants within the decision area, although there is habitat. The species is limited to moist stream banks, seeps, and hanging gardens in mixed desert shrub, pinyon-juniper, and oakbrush communities. The species is limited to elevations of 4,000 to 6,200 feet (Utah Native Plant Society 2005).

Fish and Wildlife

BLM works closely with UDWR to manage habitat for fish and wildlife (including big game, upland game, waterfowl, neotropical migratory birds, small mammals, amphibians and reptiles) to achieve and maintain suitable habitat for desired population levels and distribution within the decision area. The UDWR is responsible for managing wildlife population levels, while BLM is responsible for managing wildlife and fisheries habitat in a condition which will support desired levels of species. BLM works cooperatively with UDWR to maintain and reestablish populations of native species that have used the historic range located within the Kanab RMP boundary through habitat management and restoration.

Fish and wildlife habitat is generally managed according to the guiding principles outlined by BLM *Wildlife 2000*, *The Riparian-Wetlands Initiative for the 1990s*, *A Strategy for Future Waterfowl Habitat Management on Public Lands*, *Watchable Wildlife*, and *Recreational Fisheries Program* and other species and habitat specific direction such as the National Sage-grouse Habitat Conservation Strategy (BLM 2004a). BLM implements this general guidance through specific management actions associated with species in the project area.

Wildlife Habitat Types

Wildlife habitat needs vary significantly by species. It is generally true that healthy and sustainable wildlife populations can be supported where there is a diverse mix of vegetation communities to supply structure, forage, cover, and other specific habitat requirements.

Desert Scrub

Desert scrub includes numerous upland vegetation communities with a shrubland component and a variable understory of grass and forbs. Herbaceous plants are vital to the majority of all wildlife species by providing food, cover, and structure. The thermal relief provided by scrub cover helps wildlife to survive the rigors of summer heat and winter cold. It supplies browse, seeds, and cover for birds and small and large mammals. Intermingled areas of desert grasslands add diversity to vegetation and habitat structure in desert scrub communities.

Sagebrush Steppe

Sagebrush habitat is prevalent in the western and central portions of the decision area. At mid to lower elevations, big sagebrush is the dominant habitat type that provides important winter habitat for certain wildlife species (e.g., mule deer, pronghorn, and greater sage-grouse), and localized yearlong habitat by sagebrush-obligate species (e.g., pygmy rabbit). Sagebrush also provides crucially important breeding, nesting, and brood-rearing habitat for these species. Intermingled occurrences of grasslands and several low sages add to the diversity of vegetation and habitat structure. As a result of the regional losses of sagebrush communities, and the number of sagebrush obligate wildlife, maintenance and improvement of existing sagebrush habitat has become crucial for community structure and diversity and providing crucial habitat for obligate species.

Pinyon-Juniper Woodlands

Pinyon-juniper woodlands are widely dispersed and have expanded into sagebrush and other vegetation communities. Pinyon-juniper woodlands provide some wildlife habitat. Although understory vegetation is reduced beneath pinyon-juniper stands, they provide greater structural diversity than desert shrub or sagebrush steppe habitats.

Mixed Conifer

Mixed conifer habitats in the field office are located in upper elevations and mesic areas. These habitats contain security areas (i.e., hiding cover) for big game species and can provide important linkage corridors for wildlife movement between other seasonal habitats.

Riparian/Wetland

Riparian/wetland habitats are crucial components in the landscape as they provide various life-cycle requirements such as foraging, bird nesting, roosting, and hiding cover, as well as travel corridors for numerous species. The riparian vegetation is often a corridor for animal migration and travel. A high degree of plant diversity typically occurs along the riparian corridors, exhibiting variable density and composition of plants that lead to diversity of openness and groundcover. Invasive species such as tamarisk and Russian olive are a management concern due to their prolific seed production and high evapotranspiration rates. Tamarisk can quickly overtake a riparian area upon introduction into that area, due to the tremendous amounts of seeds they produce. These species then reduce the amount of available surface water and affect the health of riparian systems.

Riparian vegetation moderates water temperatures and provides bank structures that reduce erosion and provide overhead vegetation cover for fish. Intact riparian communities also serve to slow overland flow, capture sediments, and provide a filter that enhances water quality. Water quality, especially in regard to such factors as sediment, temperature, and dissolved oxygen, also greatly affect fisheries habitat.

Aspen

Multi-seral stages of aspen and associated understory provide multiple benefits to many wildlife species. Many raptor species are adapted to aspen forest and the adjacent open brush, meadows, and grasslands that provide a vast array of prey species. The aspen ecosystem is considered to be of crucial importance to economically important large game species (e.g., elk and deer). Aspen ecosystems provide cover, calving, and fawning habitat for big game, and nesting habitat for migratory birds. Aspen also provides suitable vegetation for breeding and feeding areas.

Non-Vegetated (Cliff Talus)

Talus slopes are steep slopes of exposed chunks of rock that offer both basking sites and crevices for hiding. Slopes with large boulders provide caves that may be large enough for a species such as a bobcat to occupy. Cliffs are faces of vertical exposed rock that sometimes have a talus slope at their base. Several raptor species and birds such as black swifts use cliff and talus areas for nesting and brood rearing habitat. Peregrine falcons and golden eagles generally nest on rock outcrops and cliffs that range from 30 to 400 feet high. Canyon and rock wrens nest in the fractured talus slope below cliff faces, particularly in areas that are interspersed with open, patchy forests of ponderosa pine, Douglas fir and sagebrush steppe communities.

Agriculture/Developed

Agricultural land within the planning area is an aggregation of areas with grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops. These areas provide important forage for big game and some migratory bird species as well as cover for smaller game species.

Ponderosa Pine

Ponderosa pine forests provide habitats for various wildlife species. Snags in the mature pine forest provide a large number of species with nesting and roosting sites. Big game, such as deer and elk, also use the pine forests for food and shelter (Howard 2003).

Oak/Mountain Shrub

There are two types of mountain shrub communities within the planning area —mountain big sagebrush and mixed mountain shrub. These areas provide food and cover for mule deer, elk, blue grouse, black bear and black-headed grosbeak.

Big Game

Desert Bighorn Sheep

Both crucial and high value habitat for desert bighorn sheep is located along the eastern border of Garfield County and throughout Kane County, most of which is not in the decision area. There is a small amount of crucial desert bighorn sheep habitat on the western edge of Kane County in the decision area. Desert bighorn sheep, which are considered to be yearlong residents of their range, do not have seasonal ranges as do mule deer and elk (Map 9). Bighorn sheep prefer very open vegetation types such as low shrub, grassland, and other treeless types typically associated with steep talus and rubble slopes. Bighorn diets consist of a variety of shrubs forbs and grasses. Bighorn sheep lambing occurs on steep talus slopes typically within one to two miles of reliable water sources.

Bighorn sheep are extremely vulnerable to a variety of viral and bacterial diseases carried by livestock, principally domestic sheep. In some reported cases, bighorn sheep exposure to these diseases has resulted in the decimation of entire populations. These diseases are transmitted in numerous ways, including nose-to-nose contact, and wet soils associated with areas of concentrated use such as stock watering ponds. Management of bighorn sheep is guided by the following BLM documents: Utah BLM Statewide Desert Bighorn Sheep Management Plan (BLM 1986), Revised Guidelines for Domestic Sheep and Goat Management in Native Wild Sheep Habitats (BLM 1998), Utah Bighorn Sheep Statewide Management Plan (UDWR 1999b), and corresponding UDWR Herd Management Plans.

Pronghorn

Both crucial and high value habitat for pronghorn is located within the planning area throughout Garfield and Kane Counties. Pronghorn prefer very open vegetative types such as salt desert shrub, grassland, sagebrush steppe, and other treeless types. Typically, pronghorn avoid slopes greater than 20 percent (Ockenfels et al. 1994). Pronghorn fawning occurs throughout the range of this species (Map 9). Pronghorn diets consist of a variety of forbs, shrubs, and grasses. Forbs are of particular importance during spring and summer, whereas shrubs are more important during the winter.

Mule Deer

Crucial and high value mule deer habitat is located in the western portions of Kane County and throughout Garfield County, largely coinciding with western portions of the decision area (Map 9). Mule deer are migratory, moving seasonally between summer and winter ranges. Mule deer usually summer at high elevations and winter at low elevations. Mule deer feed on forbs, grasses and shrubs throughout the spring and summer months and primarily shrubs during the fall and winter. Shrubs such as Wyoming big sagebrush, true mountain mahogany, fourwing saltbush, and antelope bitterbrush are important winter forage species. Mule deer fawn during the spring on their migration back to their summer range.

Mule deer have a high degree of fidelity to specific winter ranges where high population densities concentrate on relatively small areas. Because of the relatively small winter range area, high population densities, and the natural stress of winter survival, mule deer are vulnerable to stress caused by human activity in winter range areas. Mule deer are displaced an average of 600 feet from areas of human activity (Hiat and Baker 1981).

Elk

Crucial value habitat exists in the eastern portions of the planning area in Garfield County. High value habitat exists in the western portions of the planning area in both Kane and Garfield Counties (Map 9). Elk are migratory, moving seasonally between summer and winter ranges. They summer at higher elevation ranges in aspen and conifers where their diet consist primarily of grasses and forbs. Elk calve during late spring and early summer in aspen-mountain browse intermixed vegetation types. Elk winter at mid- to lower elevation ranges occupying the sagebrush and pinyon-juniper vegetation types where they congregate in herds of 50 to 200 or more. Human activity in elk winter range adds additional stress to the natural stress of winter survival.

Black Bear

Black bear is currently the only species of bear inhabiting Utah. Black bears are native to and fairly common in Utah. High value, substantial value, and a smaller amount of crucial habitat is located within the planning area. Black bears in Garfield and Kane Counties are primarily in large forested areas. As a result of an increase in bear hunting, a statewide limited entry permit system was implemented in 1990 which requires hunters to draw permits and hunt within a specific unit (UDWR 2000b).

Cougar

Cougar, or mountain lions, are found statewide in Utah, occupying habitat types ranging from rugged desert areas to above timberline. Crucial value habitat is found throughout Garfield and Kane Counties. The species is fairly common throughout Utah, but individuals are rarely seen because of their secretive nature. Seasonally, their movements follow their main prey—mule deer. Cougar will also feed on rabbits, elk, or other animals, but about 80 percent of their diet consists of deer. Cougars are active year-round, during day and night, although most activity occurs at dawn and dusk. They are hunted on a limited, and closely monitored basis in Utah (UDWR 1999c).

Furbearers

Several furbearer species in the field office are managed according to Utah Furbearers Regulations. Furbearers as defined by UDWR include bobcats, raccoons, badgers, weasels, and beavers. Bobcats are fairly common in Utah but are rarely seen because of their secretive nature.

Upland Game

Upland game species throughout the planning area include Gambel's quail, greater sage-grouse, blue grouse, ruffed grouse, mourning dove band-tailed pigeon, ring-necked pheasant, and chukar partridge. In addition to upland bird species, the cottontail rabbit and snowshoe hare are also present. The habitat for these species varies and depends upon season of use, as well as availability of food and shelter.

Migratory Birds

The overall decline of some migratory birds has been well documented. Reasons for the decline are complex and include such factors as loss of habitat due to fragmentation, alteration, urban expansion,

natural disasters, loss or alteration of habitat in non-breeding areas along migratory routes, and brood parasitism (Parrish et al 2002). Numerous programs have been initiated to combat this decline. The North American Waterfowl Management Plan (NAWMP) was adopted by the United States and Canada to address the conservation and restoration of waterfowl, and other migratory waterbirds, and their habitats. The international Partners in Flight (PIF) program, is a coordinated effort to document and reverse apparent declines in the populations of all non-game land birds that breed north of Mexico and then migrate to Mexico, Central and South America and the Caribbean in the winter months. Executive Order 13186, signed in 2001, requires all Federal agencies that might have a measurable negative effect on migratory birds to develop a Memorandum of Understanding with the U.S. Fish and Wildlife Service, to promote the recommendations of NAWMP, North American Bird Conservation Initiative (NABCI), North American Bird Conservation Act, and other migratory bird programs. The Executive Order further requires Federal agencies to consider the effects that planned or authorized activities will have on migratory birds and their habitats and to consider migratory birds in their land use planning efforts.

The Intermountain West Joint Venture (IWJV) was established to coordinate implementation and achievement of population and habitat objectives of the NAWMP within parts of eleven Western states, including all of Utah. In 2005, IWJV partners within the State of Utah merged and synthesized habitat goals and objectives of existing bird conservation plans into a coordinated planning document entitled the *Coordinated Implementation Plan for Bird Conservation in Utah* which reflects the habitat priorities of all bird conservation programs in Utah. The plan identifies portions of three Bird Habitat Conservation Areas (BHCAs) that occur within the planning area. While BHCAs carry no authority, they are recognized by agencies as areas that contain important habitat for some species. In 1993 a PIF program in Utah was established for the purpose of addressing the status of avian populations within the state and to provide data relevant to issues raised concerning the status of Neotropical migratory birds. Additionally, the U.S. Fish and Wildlife Service (USFWS), in compliance with the Fish and Wildlife Conservation Act, published the *Birds of Conservation Concern 2002*, which is a report that identifies migratory and non-migratory bird species (beyond those already designated as Federally threatened or endangered) that represent the highest need for conservation initiatives.

To date, these reports identify over 400 species of birds within the State of Utah. Of them, 231 species have been recognized as regular breeders in the state and in need of consideration in the Utah Avian Conservation Strategy (UTACS) process. Of the 231 species, 132 (57%) are neotropical migratory birds (NTMB), and 29 (12%) are considered State Sensitive species, two of which are also federally listed as Endangered and four are listed as Threatened (Parrish et al 2002). Primary and secondary breeding habitat preferences have been identified for each of the 231 species. Primary habitat is considered to be the nesting habitat most commonly used by a species, while secondary breeding habitat is the second most common. Winter habitat preferences have also been identified.

Table 10 identifies both migratory and non-migratory species that could occur within the planning area; PIF or the Fish and Wildlife Service have identified these species as needing special conservation actions. Conservation areas are based on species primary and secondary habitat types and those habitat types that occur within the planning area. Table 10 also identifies species primary, secondary, and winter habitat (habitat types have been combined within the vegetation categories identified in the Vegetation section of this document). To distinguish those species in relation to the planning area, a compilation of species identified in the documents mentioned above was created and was intersected with the Colorado Plateau physiographic region identified by the PIF program.

Table 10. Migratory and Non-Migratory Bird Species

Species	PIF Priority Species	FWS Birds of Conservation Concern	Primary Breeding Habitat	Secondary Breeding Habitat	Winter Habitat
American avocet	X	X	Riparian/Wetland	Non-Vegetated	Migrant
Bald Eagle ¹			Riparian/Wetland	Other	Riparian/Wetland
Bendire's thrasher	X	X	Desert Scrub	Desert Scrub	Migrant
Black-chinned sparrow		X	Desert Scrub	Desert Scrub	Migrant
Black-throated gray Warbler	X	X	Pinyon-Juniper Woodland	Oak/Mountain Shrub	Migrant
Blue Grosbeak ¹			Riparian/Wetland	Riparian/Wetland	Migrant
Brewer's sparrow	X	X	Sagebrush Steppe	Desert Scrub	Migrant
Broad-tailed hummingbird	X		Riparian/Wetland	Riparian/Wetland	Migrant
Burrowing Owl ¹			Desert Scrub	Sagebrush Steppe	Migrant
California Condor ¹			Non-Vegetated	N/A	Desert Scrub
Common yellowthroat ¹			Riparian/Wetland	Riparian/Wetland	Migrant
Ferruginous hawk ¹	X	X	Pinyon-Juniper Woodland	Sagebrush Steppe	Sagebrush Steppe
Flammulated owl		X	Ponderosa Pine	Mixed Conifer	Migrant
Gambel's quail	X		Desert Scrub	Riparian/Wetland	Desert Scrub
Golden eagle		X	Non-Vegetated	Desert Scrub	Desert Scrub
Grace's warbler		X	Ponderosa Pine	Mixed Conifer	Migrant
Grasshopper Sparrow ¹			Sagebrush Steppe	Sagebrush Steppe	Migrant
Gray vireo	X	X	Pinyon-Juniper Woodland	Oak/Mountain Shrub	Migrant
Greater Sage-grouse ¹	X	X	Sagebrush Steppe	Sagebrush Steppe	Sagebrush Steppe
Lewis's woodpecker ¹	X	X	Ponderosa Pine	Riparian/Wetland	Oak/Mountain Shrub
Loggerhead shrike		X	Desert Scrub	Pinyon-Juniper Woodland	Desert Scrub
Long-billed curlew ¹	X	X	Sagebrush Steppe	Other	Migrant
Lucy's warbler	X		Riparian/Wetland	Desert Scrub	Migrant

Species	PIF Priority Species	FWS Birds of Conservation Concern	Primary Breeding Habitat	Secondary Breeding Habitat	Winter Habitat
Mexican Spotted Owl ¹	X		Non-Vegetated	Non-Vegetated	Non-Vegetated
Mountain plover ¹	X	X	Desert Scrub	Desert Scrub	Migrant
Northern Goshawk ¹			Ponderosa Pine	Aspen	Riparian/Wetland
Northern Harrier		X	Riparian/Wetland	Desert Scrub	Other
Peregrine Falcon ¹		X	Non-Vegetated	Riparian/Wetland	Riparian/Wetland
Pinyon jay		X	Pinyon-Juniper Woodland	Ponderosa Pine	Pinyon-Juniper Woodland
Prairie falcon		X	Non-Vegetated	Desert Scrub	Other
Pygmy Nuthatch		X	Ponderosa Pine	Aspen	Ponderosa Pine
Red-naped sapsucker		X	Aspen	Mixed Conifer	Riparian/Wetland
Sage sparrow	X	X	Sagebrush Steppe	Desert Scrub	Desert Scrub
Short-eared Owl ¹			Wetland/Riparian	Sagebrush Steppe	Other
Snowy plover		X	Non-Vegetated	Non-Vegetated	Migrant
Southwestern Willow flycatcher ¹			Riparian/Wetland	Riparian/Wetland	Migrant
Swainson's hawk ¹		X	Other	Aspen	Migrant
Virginia's warbler	X	X	Oak/Mountain Shrub	Pinyon-Juniper Woodland	Migrant
Williamson sapsucker ¹		X	Mixed Conifer	Aspen	Migrant
Yellow-billed cuckoo ¹	X	X	Riparian/Wetland	Other	Migrant

Note: 1- State Sensitive Species

Source: IWJV 2005; Parrish et. al. 2002; USFWS 2002

Other Wildlife Species

There is a lack of information on small mammals such as rodents and bats, as well as amphibians and reptiles in the planning area. Databases maintained by the Utah Natural Heritage Program document general occurrences and potential for many of these groups of wildlife but site-specific inventories have not been conducted for most of the field office. However, as inventories are conducted, new occurrences and range extensions are being discovered.

Fish Species

Fisheries habitat includes perennial and intermittent streams and flatwater (e.g., lakes and reservoirs) that support fish through at least a portion of the year. The condition of fisheries habitat is related to riparian habitat and stream channel characteristics. Past stocking efforts have established many nonnative fish species in streams, lakes, and reservoirs. Aquatic invertebrates and amphibians are integral components of warm and cool to coldwater fish communities.

Wildland Fire Ecology

Fire is an inherent component of ecosystems and historically has had an important role in the promotion of plant succession and the development of plant community character. Control of fires during the last century has changed plant communities and resulted in conditions that may sustain large-scale fires when natural ignition of vegetation occurs.

Fires within the planning area are both naturally occurring and used as a management tool. Naturally occurring fires are widely distributed in terms of frequency and severity. Historically, the area has displayed a moderate to high frequency of fires, averaging 47 fires per year and burning an average of 573 acres per year. During the 10-year period of 1991-2001, the planning area averaged 86 fires per year, burning an average of 448 acres annually.

Sources of Fire

The weather and fuel structure in the planning area provides an opportunity for ignitions from frequent summer storms. Lightning accounts for at least 78 percent of all starts and approximately 12,000 of the acres burned. Careless smoking, vehicle exhaust, escaped agricultural burning, and unattended campfires account for the majority of the human-caused starts. Equipment usage is also responsible for starting some fires.

Range of Potential Fire Behavior

Fires are typically categorized on the basis of period of occurrence, size class, regime, and condition class. The fire season for the planning area is usually late April to early November. The most critical fire conditions correspond with the hot summer period characterized by low moisture and late-summer thunderstorms. Over the decade that data are available (1991-2001), the large majority of wildfires have been less than a tenth of an acre in size. From 1991 to 2001, over 99 percent of the wildfires that occurred within the planning area were Size Class A (0.25 acres), B (0.25-10 acres), C (10-99 acres), and D (100-299 acres) incidents (Table 11). Only two wildfires were representative of the other three size classes (E, 300-999 acres; F, 1000-4000 acres; G, 5000+ acres).

Table 11. Fire Occurrence (Size and Acreage), 1991-2001

Size Class	A	B	C	D	E	F	G
# Fires	604	222	26	9	1	1	0
# Acres	64	295	850	1,343	724	1,204	0

Source: Kanab Field Office Files

The five fire regime classes reflect the frequency and severity of burns (Table 12). Historically, the most prolific firespread events have been wind-driven, especially in the brush plant cover types. Plume-dominated fires have occurred particularly during very dry years in the older stands of pinyon-juniper and

the mixed conifer stands. Rates of firespread through the canopies of sagebrush can exceed three miles per hour, while spread through mixed conifer and pinyon-juniper stands of one-half mile per hour are not uncommon. Periods of better than average moisture tend to keep the light fuels (i.e., grasses) green, which helps curtail firespread. The incursion of annual grasses, such as cheatgrass, is changing the fire environment. Light fuels available to burn through the height of the fire season are becoming more abundant by way of the species morphology. Much of the timbered lands of the planning area experience long return intervals between fire events. Burn severity in these communities tends to be moderate to severe resulting in stand replacement of the dominant species. Examples of these vegetation types are high elevation sub-alpine fir and spruce and some pinyon-juniper stands in the western portion of the planning area. Examples of a more moderate to frequent return interval would be sage/grasslands and the lower elevation shrub communities.

Table 12. Fire Regimes within the Planning Area

Fire Regime	Acres	Percent
I (0-35 year frequency and low to mixed severity-surface fires most common)	907,000	31
II (0-35 year frequency and high severity-stand replacement fires)	1,258,000	43
III (35-100+ year frequency and mixed severity)	2,800	<1
IV (35-100+ year frequency and high severity-stand replacement fires)	114,900	4
V (200+ year frequency and high severity-stand replacement fires)	496,800	17
Unclassified	132,100	5

Source: Kanab Field Office Files

Table 13 shows the acreages within the planning area for condition classes defined in terms of the relative risk of losing one or more key components that define an ecological system based on five ecosystem attributes—disturbance regimes (patterns and frequency of insect, disease, fire), disturbance agents, smoke production, hydrologic function (sedimentation, stream flow), and vegetation attributes (composition, structure, and resilience to disturbance agents).

Table 13. Condition Class Definitions and Acreages

Condition Class	Fire Regime Example Management Options
Condition Class 1 Acres: 243,200 8 percent of planning area	Fire regimes are within an historical range and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range. Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.
Condition Class 2 Acres: 598,900 21 percent of planning area	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime.
Condition Class 3 Acres: 1,937,400 67 percent of planning area	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical

Condition Class	Fire Regime Example Management Options
	fire regime.
Unclassified Acres: 132,100 4 percent of planning area	The unclassified category includes five SWReGAP land cover types that are not conducive to being ranked in a fire regime. Unclassified land cover types include: barren, lava, urban, water, and agricultural.

Source: Kanab Field Office Files

Types of Vegetation Susceptible to Fire

Wildfire in many of Utah's vegetation communities was historically a regular occurrence that helped define species composition, structure, and productivity (Bradley et al. 1992 and Paysen et al. 2000). As such, many plants that make up these communities are adapted to withstand wildland fire. Grasslands, sagebrush, mountain shrub, aspen and mixed conifer forests are examples of fire-adapted communities in Utah. In contrast, frequent wildland fire is not part of the normal ecology of other vegetation communities with long fire return intervals such as salt desert scrub and blackbrush, which typically are not dominated by fire adapted species (Paysen et al. 2000). Fire in these communities is generally viewed as detrimental because plant succession may take decades to centuries for the vegetation to recover. Some species may never recuperate.

The widespread presence of invasive nonnative species has greatly altered the resource character and values across the landscape and may pose an even greater threat in the future. Historic post-fire recovery processes may no longer dominate the recovery and regeneration process due to introduced species. Cheatgrass and some of the knapweeds are known to alter (shorten) fire return intervals and may dramatically expand their range and coverage after fires. Degraded communities may facilitate expansion of invasive species (e.g., cheatgrass), have lower biological resource values, and pose increased fire hazards. For location of acres and additional descriptions of these vegetation types in the planning area, refer to the Vegetation section of this AMS.

Salt Desert Scrub

Salt desert scrub is characterized by salt tolerant succulent shrubs including greasewood, ephedra, shadscale, four-wing saltbush and threadleaf rubber rabbitbrush. Common grasses include inland saltgrass, alkali sacaton, bottlebrush squirreltail and Indian ricegrass. The invasive species, cheatgrass, halogeton, tall peppergrass, Russian thistle and Russian knapweed can be found either scattered throughout or predominant within salt desert scrub, which generally has low productivity and naturally sparse understory vegetation and light fuels.

Fire frequency has been estimated at 35 to more than 300 years for the salt desert scrub vegetation type and is classified as Fire Regime V. Because of the risk of losing key ecosystem components and greatly increased fire regimes as invasive annual grasses dominate, salt desert scrub is typically classified as Fire Regime Condition Class (FRCC) 3.

A lack of continuous cover (fuels) made fire rare to nonexistent in salt desert scrub communities. Historically, these types did not burn often enough or in patches large enough to support dominance of fire-adapted plants. Most salt desert scrub species do not readily regenerate following fire. At present, cheatgrass has invaded large portions of Utah's salt desert scrub types and now provides sufficient fuel loading to support large, fast moving fires. Where cheatgrass has invaded, native salt desert scrub communities have been permanently lost or are at high risk of loss. Further expansion of invasive species (cheatgrass, tall peppergrass, and Russian knapweed) following fire is a major concern for salt desert scrub communities.

Pinyon and Juniper Woodland

The relatively vast area covered by this vegetation type is in part due to past (e.g., <100-year) overgrazing (which reduces competition) and historic fire suppression in range communities—primarily in grasslands and sagebrush and, to a lesser extent, in forested communities. It is estimated that pinyon-juniper woodlands have increased tenfold over the past 130 years throughout the Intermountain West (Miller and Tausch 2001). Many areas where juniper encroachment has occurred have also been invaded by cheatgrass in the understory, which raises concerns of further cheatgrass expansion following fire. Old-growth pinyon and juniper woodland is estimated to be less than ten percent of the current area classified as pinyon and juniper woodland (Miller and Tausch 2001). These old-growth areas are often restricted to fire-safe habitats (e.g., steep, dissected and rocky terrain, and in thin, substrates along ridges).

Fire frequency has been estimated at 200 to more than 300 years for old-growth pinyon and juniper (Romme et al. 2002 and Goodrich and Barber 1999) and would be classified as Fire Regime V. Most of the area where pinyon and juniper woodland currently dominates was historically characterized by fires burning every 15 to 50 years (Kitchen 2004 and Miller and Tausch 2001); this would characterize the Fire Regime as II. These areas in Utah are typically described by FRCC 2 (greater than 7,000 feet) or 3 (less than 7,000 feet). Areas of FRCC 3 are characterized by dense stands of pinyon and juniper, scarce understory and high potential for cheatgrass invasion following fire. FRCC 2 has areas of encroached pinyon and juniper woodland, but less dense than FRCC 3 and are at less risk of cheatgrass invasion following fire.

Because it is a non-sprouter and is thin-barked when young, fire was the major historical cause of destruction for young juniper trees. However, adult juniper trees in mature stands are difficult to burn since the understory is usually sparse (older trees succumb to fire when 60 percent of the crown is scorched). Pure juniper stands need 35 mph winds or greater to carry wind through the canopy (Winward et al. 1997). Fire is known to have been the most important natural disturbance that impacted the distribution of juniper and/or pinyon-juniper woodlands before the introduction of livestock in the 19th century (Miller and Rose 1999). Burkhardt and Tisdale (1976 and Tirmenstein 1999) concluded that fire frequencies of 30 to 40 years would help keep juniper from expanding into mountain big sagebrush communities.

Sagebrush

Fire frequency varies for the different sagebrush species and subspecies, but is considered to be between 10 and 110 years depending on precipitation, elevation, sagebrush species and associated vegetation. Although sagebrush does not re-sprout with fire, it is a prolific seeder, and studies show that burned soil and sagebrush seed have higher germination rates. Pre-European settlement, stand-replacing fire frequencies for low-elevation sagebrush are estimated to vary from 60 to 110 years (Whisenant 1990, Peters and Bunting 1994, and Miller et al. 2001). For mountain big sagebrush, pre-European settlement stand replacing fire frequencies have been estimated to vary between 10 and 25 years (Houston 1973 and Harniss and Murray 1973). Sagebrush, characterized by Fire Regime II, is considered to be generally in a FRCC 2 if it is above 6,500 feet and FRCC 3 below 6,500 feet because of high risk of losing key ecosystem components following fire due to cheatgrass invasion.

Most sagebrush species do not sprout after fire and most plants are killed by low- to high-severity fires. This is true of all three subspecies of big sagebrush common throughout Utah. Generally, the herbaceous understory composition does not determine the intensity and severity of wildland fires—sagebrush itself is the primary fire carrier. The high canopy cover associated with late, mature sagebrush stands likely facilitated historic stand-replacing fires. However, the pre-fire understory is an important determinant of post-fire response. A sagebrush stand with a robust understory of native grasses and forbs would

generally be replaced after fire with native perennial grassland. Degraded sagebrush stands with poorly evolved native understories are most vulnerable to colonization by invasive species after fire. As sagebrush seeds generally are not transported far from the parent plant, unburned areas within large burn areas are often the most important source of seed material for natural recruitment and re-establishment of sagebrush (Tirmenstein 1999, Howard 1999, and Johnson 2000).

Grasslands

Grassland types include native perennial grasslands, seedlings of native species, and exotic perennial grasses (primarily crested wheatgrass) and some cheatgrass. A discussion on cheatgrass is included in this section because of its significant role in Utah's grassland ecology.

Since native grasslands are often seral to sagebrush, fire regimes are similar—Fire Regime II. Perennial grasses respond vigorously to fires of various severities by re-sprouting from basal growing points following fire. The primary determinant of fire response in native perennial grasslands is fire residence time. Fast, high-intensity fires have a short residence time and seldom cause substantial mortality to native perennial bunchgrasses. Slow backing fires have a longer residence time and greater severity; mortality to native perennial bunchgrasses may be high under these conditions. With most natural ignitions, the predominant firespread would be as fast moving as headfire.

Wherever cheatgrass dominates, the prevailing FRCC is 3 due to the loss of key ecosystem components such as native species. The fire regime of cheatgrass dominated sites is the historical fire regime of that site before it was invaded by cheatgrass. Where cheatgrass has invaded a salt desert scrub community, the fire regime would be Fire Regime V.

The establishment of cheatgrass in a wildland community fosters much more frequent fire return intervals by extending the time during which the community is susceptible to wildland fire ignitions. In the summer, cheatgrass dries out four to six weeks earlier than perennial grasses and forms a fine-textured, highly flammable fuel. Once cheatgrass dominates a site, the fire regime is altered to more frequent stand replacing fires such as the cheatgrass fire regime. Shortened natural and historical fire rotations impact perennial vegetation by killing the tops of the plants and allowing less time and fewer growing seasons between recurrent fires. Cheatgrass seed production can be impacted by prescribed fire when it is applied during the brief period between the purple stage and when the seeds are dropped.

Blackbrush

Fires in blackbrush were historically infrequent. This ecosystem is at moderate risk of losing key ecosystem components due to fire. It is characterized by Fire Regime V and FRCC 2. Once cheatgrass dominates a blackbrush site, the site would then be FRCC 3. Recent experience on Utah BLM land has shown that blackbrush does not respond favorably to fire. In addition, most of the blackbrush in Utah has suffered substantial dieback due to recent drought conditions. Burning has promoted succession to grassland by destroying the biological crust that stabilizes the soil. The biological crust provides important soil microflora apparently required for blackbrush survival or reestablishment (Paysen et al. 2000). Frequent large fires can be problematic from a management standpoint because recovery can take more than four decades or, in some cases, there is no recovery (Wright and Bailey 1982 and Paysen et al. 2000). Blackbrush is often found in monocultures with few other plants present; therefore, seedbanks are often deprived of other plant species.

Mountain Shrub

Mountain shrub is a highly diverse community made up in part of Gambel oak, chokecherry, serviceberry, currant, mountain snowberry, elderberry, bitterbrush and mountain sagebrush. Stand replacing fire frequency ranges from 25 to 100 years in mountain shrub (Gruell and Loope 1974), though return intervals may vary widely with changes in elevation, aspect, site moisture, and the associated forest or woodland type. Mountain shrubs are classified as Fire Regimes I, II and IV depending on the dominant species. FRCCs also vary depending on the dominant species, although most mountain shrub communities are in FRCC 2 due to some missed fire return intervals, moderate risk of losing key ecosystem components and moderately altered vegetation attributes. However, some mountain shrub communities at lower elevations (less than 6,500 feet) are classified as FRCC 3 because of the high risk of cheatgrass invasion following fire.

Most species of mountain shrubs re-sprout following low- to moderate-severity fire. Sprouting mountain shrub communities generally recover following wildland fire and are considered to be fire-tolerant. Mountain sagebrush and bitterbrush do not re-sprout and, depending on the severity of the fire, may be completely removed from a site. Evidence shows that bitterbrush may benefit from low-severity fire (Winward et al. 1997).

Mixed Conifer

Major forest community types of mixed conifer include Douglas fir, lodgepole pine, Englemann spruce and sub-alpine fir (although none of these species except Douglas fir grow within the decision area). Fire frequencies in mixed conifer range from 100 to 300 years. These forests are characterized by a combination of understory and complete stand replacement fire regimes (Arno 2000). Mixed conifer is classified as Fire Regime III or IV depending on the elevation and related dominant species. For example, conifer-shrub communities, occurring at lower elevations that have pure conifer stands, would be characterized by Fire Regime III. Because of the longer historic fire return intervals and well-functioning vegetation attributes, mixed conifer is classified as FRCC 1 when associated with Fire Regime IV, and FRCC 2 when associated with Fire Regime III.

This mixed severity fire regime often results in a mosaic pattern of stand structure and fuels. Past stand burn mosaics tend to increase the probability that subsequent fires will also burn in a mixed pattern (Arno 2000). Dead woody fuels often accumulate on the ground in a haphazard manner. The greatest fuel loadings tend to occur on the most productive sites, which are predominantly stand replacement fire regimes.

Ponderosa Pine

Fire frequency for ponderosa pine communities ranges from 10 to 40 years with low- to mixed-severity fires. Ponderosa pine forests in Utah are classified as Fire Regime I and FRCC 3. These forests have typically missed between five and ten fire cycles in the years of fire suppression and could be at risk for cheatgrass invasion if not properly managed. Otherwise, the associated understory species exclude cheatgrass. Ponderosa pines have thick bark, which protects them from serious damage from surface fires; it is considered the most fire-adapted conifer in the West (Bradley et al. 1992).

Riparian and Wetland

Historically, fire in riparian communities would have been infrequent and varied from small size, with highly mosaic burn patterns as a result of the higher moisture content generally present in riparian areas and species, to stand replacing burns likely to have occurred only in extreme drought periods. These

riparian communities are in a Fire Regime IV with most areas presently in FRCCs 2 and 3. Lower elevation riparian areas would be in FRCC 3 due to higher incidence and potential of invasive species.

Fremont cottonwood communities are characterized by a late seral stage (e.g., all mature to late-mature trees) with little or no representation of younger age-classes and are not typically fire-adapted. Narrowleaf cottonwood is a somewhat fire-adapted species that may re-sprout from roots, provided the stands are not decadent and occur in areas where the water table remains reasonably high throughout the growing season. The life history and ecology of cottonwoods are intimately tied with flooding, erosion and deposition on the flood plains because the seeds only germinate and establish on bare, moist alluvium. Willow species typically sprout vigorously following a fast-moving fire. Slow moving fires are generally more damaging, presumably due to greater heat transfer to root crowns.

Aspen

Fire frequencies in aspen range between 25 to 100 years with mixed severity (Gruell and Loope 1974). Aspen is characterized by Fire Regime IV and FRCC 2. Fire regimes and vegetation structure have been moderately altered from the historical conditions. Pure stands of aspen are particularly susceptible to mortality of aboveground stems from fire of low severity, even though aspen is well adapted to regeneration by sprouting after fire (Jones and DeByle 1985 and Mutch 1970). Aspen stands do not easily burn and often act as natural fuelbreaks during wildland fires. Fires in young aspen stands tend to be low intensity surface fires unless there is a great deal of understory fuel. In older stands, during the warmest and/or driest months of the year, abundant fuels can lead to higher-intensity fires. Decadent aspen stands and other areas with thin, acidic soils may be less vigorous at regenerating via suckering and may tend to support conifers even after fire (Howard 1996).

Characterization

The fuel structure in the planning area is gradually changing due to management practices and incursion of nonnative annual grasses, primarily cheatgrass (*Bromus tectorum*). In areas where fuels are continuous, there is the potential for fires to spread readily and rapidly during the height of the average fire season. Much of this area is grouped typically in fire regimes I and II, but many of the pinyon and juniper stands have much older stand characteristics, which often have heavier fuel accumulations and burn with stand replacement fire behavior. Many areas exist where sparse fuels and other natural barriers limit firespread. Most are dry sites where the vegetation is of a moderate to old age class distribution. Cheatgrass has significantly increased from historically inhabiting scattered pockets to becoming a dominant fine fuel component intermixed with sagebrush and pinyon-juniper stands.

The moderate to long return fire interval, fire exclusion and other management practices, and increased human use and incursion into these areas have rendered many of the forested areas in peril of large severe wildland fires. These forests have achieved a level of vegetation stocking and dead and down fuel loads to exacerbate large fire spread through the dry seasons of the year. Recent insect and wind episodes have increased fuel loadings in localized areas to critical levels.

The hazard component varies across the planning area from very low to very high. Mature stands of oak brush inhabit much of the steeper slopes above 6,500 feet. Decadent stands of continuous bitterbrush/sagebrush are common. Insect-killed Douglas fir also contributes to high hazard areas.

Cultural Resources

Cultural resources are sensitive, irreplaceable resources with potential public and scientific uses, and are an important and integral part of our national heritage. Cultural resources constitute “a definite location of

human activity, occupation, or use identifiable through field inventories (i.e., surveys), historical documentation, or oral evidence” (BLM-M-8110). The term “cultural resource” also includes “historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (i.e., sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit” (BLM-M-8110). Archaeological resources, a subset of cultural resources, are “any material remains of human life or activities that are at least 100 years of age, and that are of archaeological interest” as further defined in 43 CFR 7.3. Native American religious concerns, a critical element noted in Appendix 5 of the BLM NEPA handbook, will be addressed in the Social and Economic features section of this AMS, as noted in Appendix F of the planning handbook.

Current Conditions

Within the decision area, a variety of cultural resource site types attributed to culturally-distinct chronological periods ranging from over 10,000 years ago to the present have been discovered with a high potential for finding additional resources. Archaeological investigations started with the Harvard-sponsored Claflin-Emerson expeditions in the late 1920s led by Noel Morss and the 1926 work by Neil Judd (Geib et al. 2001; Janetski 2002). Later work centered around what is called “salvage...and industrial development archaeology” (Geib et al. 2001:41) with the very large Glen Canyon Project which included archaeological survey and excavation of large areas surrounding what is now Lake Powell. In response to increased coal production and new legislation since the 1970s inventories have traditionally been conducted to support site-specific surface disturbing projects, such as mineral and energy development, to comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA) and other cultural resource preservation laws. Additionally, academic institutions performed some research excavations, although such scientific investigations were limited. Previous cultural resource inventories have not led to the investigation of the variety of environmental and ecological ranges present, thereby under representing known current cultural resource sites. Intensive cultural resource inventories meeting Utah Class III standards (i.e. 15 meter transect intervals) have only been completed on approximately 57,000 acres.

A total of 1,023 cultural resource sites are listed in the State Historic Preservation Officer (SHPO) database within the decision area. Cultural resources are classified into site types based on similar physical or cultural characteristics identified as components or occupations. At the broadest level, cultural resource sites are categorized as containing either prehistoric or historic components. Because geographic locations ideal for human use may remain constant from one period to another, the following table (Table 14) discusses both the number of sites with single, identified occupations and the number of identified cultural components, as cultural materials from one site may be attributed to several time periods. Prehistoric sites can be associated with one or more of four cultural traditions— Paleo-Indian, Archaic, Formative (Fremont or Ancestral Puebloan), and Post-Formative (Geib et al. 2001). There are 779 prehistoric sites from the various cultural traditions in the decision area. Many of the sites (312) are not able to be associated with a specific prehistoric time period. This category usually includes sites with prehistoric artifacts, but that are lacking any diagnostic artifacts that would enable dating to a specific time period, such as pottery or projectile points. They are often small, simple scatters of chipped stone debris. There are 326 sites that primarily date to the Formative period. Formative period sites are the most archaeologically visible sites with diagnostic artifacts, often with evidence of architecture and pottery. Historic sites are cultural resources in the period following 1776 AD and are organized either chronologically or functionally. There are only 27 sites with evidence of historic occupations. Sites with more than one component are listed as multi-component sites, and many sites are lacking any description of cultural affiliation.

Table 14. Cultural Time Periods

Cultural Time Period	Timeframe	# Sites	Median Site Size (acres)*	# Identified Occupations	Characteristics
Paleo-Indian	Before 7,000 B.C.	1	> 1	2	Big-game subsistence patterns. No dated sites from this period, although projectile points from this period have been recovered. Paleo-Indian sites are significant due to scarcity.
Archaic	7,000 B.C. – A.D. 1	92	4.7	104	Hunting and gathering lifestyle likely with well established seasonal rounds for resource procurement. Projectile points and camps have been found and further discoveries are likely.
Formative	A.D. 1 – A.D. 1250	326	2.3	447	Introduction of bow and arrow, ceramics, and farming with associated sedentary lifestyle and population growth. As a result, more permanent settlements and associated cultural resources remain from these cultures. Scientific uncertainty still remains concerning their origin and disappearance. Identification of additional sites would be scientifically beneficial.
Post-Formative	A.D. 1250 – A.D. 1776	48	1.9	86	Return to hunting-gathering traditions with limited use of ceramics and horticulture. Diagnostic artifacts include small unnotched or side-notched projectile points and Southern Paiute Brownware ceramics. Later traits also include equestrian rock art motifs, European trade goods, wickiups, and a possible increase in the use of obsidian. Identification of additional sites would be beneficial to further research.
Historic	After ca. 1776	27	2.8	50	Euro-American settlement patterns associated with agriculture, homesteading, limited ranching, farming, minerals development, and transportation.
Multi-Component	Multiple	102	3.6		Multi-component sites are sites occupied over at least two identifiable time periods within the same geographical boundaries, e.g. an Anasazi site with a Historic campsite.
Unknown Aboriginal	Unknown	312	2.6		Unknown Aboriginal sites are sites with prehistoric type artifacts but lack diagnostic materials making the assignment to a specific prehistoric time period impossible.

Cultural Time Period	Timeframe	# Sites	Median Site Size (acres)*	# Identified Occupations	Characteristics
No Affiliation	Unknown	115	1.2		No cultural affiliation information is given on the IMACS site form.

* Median size of those sites larger than 1 acre in size

Source: Geib et al. 2001; McFadden 1996, 2001; Spangler 2001; Kanab Field Office Cultural Files; Utah Division of State History Files

The size of sites has been determined from the GIS database from the Kanab Field Office. The database codes sites as either points (< 1 acre), polygons (> 1 acre) or lines (linear sites such as roads). Specific size information is not readily available for the 769 sites less than 1 acre as they are recorded as points. The 249 sites with site size information average 6.5 acres, although the median is only 2.6 acres. They range in size from 0.05 acres to 72.2 acres. Table 14 above breaks out the size by time period. There are only five linear sites, ranging in length from 0.24 miles to 7.8 miles, with an average of 2.1 miles and a mean of 0.7 miles.

Prehistoric or historic cultural resource sites, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP) are managed as directed by 36 CFR 800, Protection of Historic and Cultural Properties. These regulations stipulate that cultural resources must be assessed for integrity of location, design, setting, materials, workmanship, feeling, and association. A property may be considered eligible for listing on the NRHP if it retains sufficient integrity of the elements above and if it meets certain criteria as outlined in National Register Bulletin 15 (NPS 1997). As listed in 36 CFR Part 60, Historic Properties, including prehistoric and historic archaeological sites and places considered important to Native Americans, must meet a specific set of criteria:

“The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

a. That are associated with events that have made a significant contribution to the broad patterns of our history; or

b. That are associated with the lives of persons significant in our past; or

c. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d. That have yielded, or may be likely to yield, information important in prehistory or history [NPS 1997:2].”

Within the decision area, only one site has formally been listed on the NRHP. The site is the Cottonwood Canyon Cliff Dwelling site, listed on the NRHP in 1980. The site is a 19 room cliff dwelling occupied by the Virgin Anasazi approximately 800 years ago during the Pueblo II period. Nearly half of the sites in the decision area (n=481) have either been recommended as eligible for listing on the NRHP (n=388) or have been determined to be eligible for listing on the NRHP by the SHPO (n=93). There are 350 sites that have been recommended not eligible for listing on the NRHP, and thus released from consideration for

further protection. Additionally, those sites where data is insufficient to make an eligibility determination (n=171) are treated as though they were eligible until supporting information shows otherwise.

Characterization

Factors regarding cultural resources include the presence and condition of cultural sites, landscapes, or places of traditional use. The trend and forecast of cultural resources in the planning area varies because of the diversity of terrain, geomorphology, access, visibility, and past and current land use patterns. Adherence to Section 106 of the NHPA and BLM policy of avoiding impacts to cultural resources provides for the continued identification and preservation of cultural resource sites. Research based surveys and Class II inventories have been conducted, and much information has been obtained to help identify the characteristics of the planning area (Geib et al. 2001; McFadden 1996, 2001; Spangler 2001). Most surveys take place in compliance with Section 106 of the NHPA, meaning the surveys are conducted as needed to identify cultural resources in a project specific context and generally are not statistically valid samples of a region.

Exposed sites and their associated artifacts, features, and/or structures are easily disturbed by natural elements such as wind and water erosion, natural deterioration and decay, animal and human intrusion, and development and maintenance activities. Vandalism to the site or collection (i.e. unauthorized digging and “pothunting”) of cultural artifacts, which are illegal under the Archaeological Resources Protection Act, has been documented. Archaeological and historic sites are known to be deteriorating from a variety of causes. Collectively, these agents have adversely affected many known cultural resources.

Over 57 percent of the recorded cultural resources in the decision area have been judged to be in either “excellent” or “good” condition, no doubt related to the remoteness and the rugged terrain limiting access to many areas. Almost 25 percent are considered in “fair” condition, and almost seven percent are listed as “poor”. The remaining have no condition information listed.

Paleontological Resources

Paleontological resources constitute a fragile and nonrenewable scientific record of the history of life on earth. It is BLM policy to manage paleontological resources for scientific, educational and recreational values, and to protect or mitigate these resources from adverse impacts.

Significance of Paleontological Resources Within the Decision Area

The fossils found in the rocks and unconsolidated deposits of the decision area are mostly the remains and traces of terrestrial organisms. The majority of these fossils date to between 65 and 250 million years ago. This period, known as the Mesozoic, is one of the most fascinating chapters in earth history. Called informally the “Age of Dinosaurs”, the Mesozoic Era saw the rise of mammals, modern snakes and lizards, modern amphibians, dinosaurs, turtles, crocodiles, marine reptiles, birds, flowering plants, and many kinds of insects. Rock layers in the region faithfully record local life and surface conditions on land for much of this time, giving scientists who study fossils (paleontologists) exceptional opportunities to learn more about this crucial time of biological development. Rocks dating to the latter part of the Mesozoic, known as the Cretaceous (65 to 144 million years ago), that crop out in nearby Grand Staircase-Escalante National Monument have already proven to contain one of the best terrestrial fossil records for this time in the world. Similar rock strata occur in the decision area and have similar potential to help understand these ancient ecosystems that foreshadowed our modern world. While the scientific value of fossils, especially vertebrates, is what drives many management decisions, these resources are also enjoyed by many in the general public as objects of wonder and beauty. Legal collection of vertebrate fossils from public lands can only be done by scientists from qualified institutions.

Paleontological Resources by Geologic Formation

Paleontological resources are integrally associated with the geologic rock units (i.e., formations) in which they are located. Fossils found in one location may be expected to occur elsewhere in the formation along the same stratigraphic horizon (Gillette and Hayden 1997). The geographic extent of the decision area contains approximately 19 formations at the surface, most of which are known to be or are likely to be fossiliferous. While a comprehensive paleontological resource inventory of these formations has not been completed within the decision area, a review of paleontological research on formations contained within the planning area has identified the types of fossil resources that could occur. Table 15 identifies these formations, their predominant depositional environments, the types of fossils present, and the formation's potential to contain paleontological resources. The geologic map of the planning area (Map 3) displays these formations in relation to its boundary. It should be noted that the table only reflects the amount of paleontological work conducted in certain areas. Other areas, formations, or facies within a formation may also contain fossils, but have not been examined and evaluated.

Table 15. Geologic Formations Present in the Decision Area

Formation Age	Formation Name	Depositional Environment	Fossils Present	Potential
Neogene	Surficial Alluvium and Colluvium	fluvial, and lacustrine	Vertebrate	Medium
	Basalt flows and cones	volcanic	Vertebrate	Low
	Surficial Eolian	eolian	Vertebrate	Low
	Surficial Landslide	gravitational and mass flow	Vertebrate	Low
	Volcanic Rocks (including basalt, rhyolite, andesite, and tuffaceous rocks)	volcanic	Vertebrate	Low
	Sevier River Formation	fluvial, lacustrine	Vertebrate, Invertebrate	Medium
Paleogene	Brianhead Group	fluvial, volcanic, and lacustrine	Invertebrates	Medium
	Claron Formation	lacustrine and fluvial	Vertebrate, Invertebrate, Plant, Trace plant	Medium
Cretaceous	Kaiparowits Formation	fluvial and lacustrine	Vertebrate, Invertebrate, Plant, Trace vertebrate,	High
	Wahweap Formation	fluvial and lacustrine	Vertebrate, Invertebrate, Plant, Trace vertebrate,	High
	Straight Cliffs Sandstone	fluvial, coastal mires, beach/marginal marine, marine	Vertebrate, Invertebrate, Plant, Trace vertebrate, Trace invertebrate,	High
	Tropic Shale	marine	Vertebrate, Invertebrate, Plant, Trace invertebrate	High

Formation Age	Formation Name	Depositional Environment	Fossils Present	Potential
	Dakota Formation	fluvial, lacustrine, coastal mires, beach/marginal marine, marine	Vertebrate, Invertebrate, Plant, Trace plant	High
Jurassic	Henrieville Sandstone	fluvial, eolian, beach/marginal marine	Plant	Low
	Entrada Sandstone	eolian, beach/marginal marine, fluvial	Plant, Trace vertebrate	Medium
	Carmel Formation/Page Sandstone	marine, beach/marginal marine, fluvial	Invertebrate, Plant, Trace invertebrate, Trace vertebrate	Medium
	Temple Cap Sandstone	eolian	None identified	Medium
	Navajo Sandstone	eolian, lacustrine	Vertebrate, Invertebrate, Plant, Trace vertebrate,	Medium
	Kayenta Formation	fluvial, eolian	Vertebrate, Invertebrate, Plant, Trace vertebrate, Trace invertebrate	High
Triassic-Jurassic	Moenave Formation	fluvial, lacustrine	Vertebrate, Plant, Invertebrate, Trace vertebrate, Trace invertebrate	High
Triassic	Chinle Formation	fluvial, lacustrine	Vertebrate, Invertebrate, Plant, Trace vertebrate, Trace invertebrate	High
	Moenkopi Formation	beach/marginal marine, marine	Vertebrate, Invertebrate, Plant, Trace vertebrate	Medium
Permian	Kaibab Limestone	marine	Vertebrate, Invertebrate	Medium

Sources: Stokes 1986; Hintze 1988; Doelling & Davis 1989; Gillette & Hayden 1997; Winkler 1990; Foster et. al 2001; Titus 2005

Paleontological Resources Potential

The potential for paleontological resources varies both by formation and within formations. The potential for paleontological resources throughout the region was determined by reviewing published literature, coupled with BLM paleontologist knowledge of unpublished work in the area. Paleontological research not completed in the decision area, but within formations that occur throughout the planning area and GSENM, provided additional support for determining the paleontological resources potential. Based on this review, it was determined that all surficial deposits had a low potential for fossils based on the general potential for Pleistocene megafauna. Very few megafaunal sites are known, but if any with diagnostic material are found, they would be of very high significance. Jurassic age formations have mostly low-to-moderate potential while all those of Cretaceous age have high potential for paleontological resources. Site-specific variations within individual formations may result in a lower potential in certain areas. As research continues throughout the area, the paleontological potential of such

areas will be further refined. Map 10 shows the paleontological resource potential across the planning area.

Paleontological Localities

Reports of fossils throughout the planning area date to the early 20th century. Most of these references to fossil resource locations have no site identification or provide vague explanations to fossil locations. (Gillette and Hayden 1997). Extensive scientific exploration in the region has increased dramatically in the past 15 to 20 years (Gillette and Hayden 1997). Most of this research, however, has taken place in GSENM. As of May 10, 2005, only 19 of the 1,175 Kane County localities contained in the Utah Geological Survey's database are known to occur in the decision area while over 950 are documented within GSENM (Hayden 2005). In Garfield County, there are 846 localities. Two of these, which date back to the mid-20th century, are documented in the decision area while 538 are in GSENM (Hayden 2005). It should be noted that 167 localities between the two counties have not had their exact location identified, and as such, land status has not been determined. The lack of localities is not due to the lack of fossils, but a lack of research. The scientific significance of fossils found adjacent to the decision area on Forest Service, state lands, and GSENM demonstrate the potential for new localities. Additionally, field inventories conducted within the decision area have identified scientifically significant specimens. While research of the decision area's paleontological resources has been minimal, as it increases, the number of localities will increase as well.

Fossils in the region represent a diverse array of plants, invertebrates, and vertebrates. Numerous scientifically significant type specimens have been found on adjacent Forest Service, state, and BLM lands (primarily in GSENM), in formations that also occur in the decision area. It is anticipated that the demand for paleontological resources for research purposes will continue to be high in the region, with the majority of new localities focused on GSENM. However, continued research at existing localities, as well as identifying new localities, is anticipated.

Visual Resources

The planning area includes parts of the Colorado Plateau and Colorado Plateau/Basin and Range Transition physiographic provinces, resulting in a broad range of visual settings. Rugged basalt cliffs in the north give way to the sandstone buttes, mesas, canyons and vistas of the western Grand Staircase physiographic subunit in the south. Other visual features scattered throughout the planning area include sand dunes, vast desert plateaus and mountain overlooks. Several scenic byways and backways cross portions of the decision area, providing views of the vistas, cliffs and rural settings. Paria Canyon, along the Arizona border, is a designated wilderness area. The canyon is deep, with steep colorful walls, and is known for its scenic qualities. Proximity of undeveloped landscapes to two national parks, a national monument, an NRA, and four state parks also contributes to the importance of visual resource management (VRM).

The decision area contains many areas that possess a high degree of scenic quality and a high level of visual sensitivity as noted below. Much of the area has been rated as scenic quality level B (out of A-C), which means the area is dominated by a moderate level of visual appeal. The higher mesas and landforms, as well as Wilderness Study Areas, have been rated as level A or high level of visual appeal, while a few valleys and lowlands have been rated as level C (low-level of visual appeal). In general, high scenic quality within the decision area is a product of the area's varied topography, striking geology, and cultural history. These visual resources are appreciated by the local population as well as by visiting public, both of whose numbers are steadily increasing. Areas with high visual sensitivity are the result of the high degree of visitor interest in and public concern for a particular area's visual resources, an area's high degree of public visibility, the level of use of an area by the public, and the type of visitor use that an area

receives. Most of the area has been determined to be medium to highly sensitive, the most sensitive areas being along the scenic byways and in the most remote, undeveloped areas. Virtually all of the area has been determined to be in distance zones one and two, zone one being along the byways and highways. None of the area has been determined to lie in the “seldom seen” distance zone three.

The main locations within the decision area that possess both outstanding scenic quality and high visual sensitivity include, but are not limited to:

- Coral Pink Sand Dunes/Moquith Mountain WSA area (including Water Canyon and Cottonwood Point)
- East Fork of the Virgin River/Parunuweap WSA (including The Barracks)
- North Fork of the Virgin River/Orderville Canyon WSAs (including Clear Creek Mountain)
- Hog Canyon and Trail Canyon areas
- The White Cliffs
- The Vermilion Cliffs (including Pugh Canyon and Willis Canyon)
- The Pink Cliffs

There are portions of the decision area that are within the viewshed of Bryce Canyon National Park. To protect the “significant visual resources of the Park as well as its visibility” several areas adjacent to the Park were “determined to be unsuitable for surface coal mining operations, including surface impacts incident to underground mining which would be visible from Bryce Canyon National Park” (OSM 1979). This Secretarial Decision recognizes and protects these scenic values, providing restrictions on coal mining on eight townships adjacent to Bryce Canyon National Park.

There are several areas of high scenic quality and visual sensitivity that are associated with travel corridors and recreational routes within the planning area. There are four Scenic Byways, one All-American Road (National Scenic Byway system) and three State Scenic Byways that pass through (see Special Designation section for more information). There are also hundreds of miles of mostly undesignated jeep, ATV, equestrian, bike, and foot trails where trail users can enjoy the scenery.

Wilderness Characteristics

Since Wilderness Study Areas (WSA) were established in the 1980s, Utah wilderness allocations and decisions have become prominent state and national issues. For more than 20 years, the public has debated over which lands have wilderness characteristics and should be considered by Congress for wilderness designation. As a result of the debate (and a significant passage of time since BLM’s original inventories), in 1996 the Department of the Interior directed BLM to reevaluate some of the lands in question. In response to this direction, BLM inventoried these lands and found approximately 2.6 million acres of public land statewide (outside of existing WSAs) to have wilderness characteristics (BLM 1999). In April 2003, the U.S. District court, District of Utah, Central district, approved an agreement negotiated to settle a lawsuit brought in 1996 by the State of Utah, Utah School and Institutional Trust Land Administration, and the Utah Association of Counties, challenging BLM’s authority to conduct new wilderness inventories. The settlement stipulated that BLM’s authority to designate new WSAs expired no later than October 21, 1993. According to the BLM Land Use Planning Handbook (Appendix C page 12), lands with wilderness characteristics (i.e. naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive and unconfined recreation), may be managed to protect or preserve those characteristics. This section addresses those lands outside existing WSAs that have been identified as having wilderness characteristics.

IM 2003-275 – Change 1 identifies wilderness characteristics that may be considered in land use planning as naturalness and outstanding opportunities for solitude or primitive recreation. There are six areas

outside of existing WSAs, totaling 87,680 acres, that were identified by BLM in 1999 as having wilderness characteristics (Table 16 and Map 12).

Table 16. Non-WSA Lands With Wilderness Characteristics

Area Name	Acres with Wilderness Characteristics
Orderville Canyon	5,330
Canaan Mountain	6,640
Parunuweap Canyon	12,090
Moquith Mountain	14,510
Upper Kanab Creek	48,310
East of Bryce	800
Total	87,680

Source: BLM 1999

The resource condition of each area is described below. This includes discussion of the current resource values and uses that are present in each of the areas. See the 1999 Utah Wilderness Inventory for documentation of the wilderness characteristics of the wilderness inventory areas discussed below.

Orderville Canyon

The Orderville Canyon inventory area is located in the northwest region of Kane County about 10 miles north of Utah Highway 9. Half of the inventory area is located north of Orderville Canyon, and the other half is south of the canyon. The area's boundaries are defined by the Zion National Park boundary, private land, substantial vehicle ways, and Orderville Canyon WSA boundaries.

The terrain consists of steep canyons and drainages, canyon rims, broad hollows, rounded peaks, and flat benches. A pinyon and juniper woodland, and some ponderosa pine, cover most of the inventory area. The understory consists of mountain mahogany, serviceberry, Gambel oak, cliffrose, and silver buffaloberry. The lower portion of the area is covered by mountain shrub vegetation, with oak, big sagebrush, serviceberry, pinyon pine, juniper, and manzanita, along with some bitterbrush and rabbitbrush. The area is currently used for woodcutting, camping, livestock grazing, big game hunting, and OHV riding.

Canaan Mountain

The Canaan Mountain inventory area is located in eastern Washington and western Kane Counties about 30 miles east of St. George. The inventory area is located on the north, south, and east sides of the Canaan Mountain WSA and shares the same rolling foothills and sandy terraces found within the WSA. Additionally, some of the area shares a border with Zion National Park lands that are under formal wilderness consideration. The area has a mixture of pinyon and juniper woodland and sagebrush vegetation. The area is used mainly for ranching and recreation, with a considerable amount of OHV use. Approximately 0.8 mile of the Eagle Crags hiking trail is within the area.

Parunuweap Canyon

The Parunuweap Canyon inventory area is located in Kane County about 20 miles northwest of Kanab. Some of the inventory area is located north of Parunuweap Canyon, while the remainder is south of the

canyon. The area is defined by private land boundaries, roads, well-defined vehicle ways, Parunuweap Canyon WSA, and Zion National Park.

The terrain consists of canyon rims and drainages, separated by flat sagebrush bench-lands or thick pinyon and juniper woodlands. Pockets of ponderosa pine and sandstone outcroppings are scattered throughout the area. The most prominent feature in the inventory area is Harris Mountain, a topographic formation that extends into the Parunuweap Canyon WSA. The area is currently used for woodcutting, big game hunting, camping, livestock grazing, and OHV riding.

Moquith Mountain

The Moquith Mountain inventory area is located in Kane County and borders the western edge of the city of Kanab. The inventory area is partly contiguous to the Moquith Mountain WSA. The area primarily consists of a long high mesa indented by several finger-like canyons and drainages. The Vermilion Cliffs is the most prominent feature in the area, with sandstone escarpments, rim rock mesas, and numerous indented canyons and drainages. The inventory area is currently used for hunting, livestock grazing, OHV riding and utility access.

Upper Kanab Creek

The upper Kanab Creek area is located 15 miles north and northwest of Kanab. The western portion is adjacent to a number of communities located in Long Valley, while the eastern part is within GSENM. The upper Kanab Creek area is exceptionally scenic, forming the backdrop for tourists traveling Highway 89 between Zion National Park, Bryce Canyon National Park, and the North Rim of the Grand Canyon.

Upper Kanab Creek is divided into two distinct areas by the prominent White Cliffs. These cliffs are one of the principal steps in the Grand Staircase cliff-lines between the Grand Canyon and Bryce Canyon. In the open canyons there is a combination of ponderosa pine and areas of colorful sandstone or sand dunes, while the lower elevations contain large, dense stands of pinyon and juniper. There are also areas of scattered ponderosa pines and stretches of riparian vegetation along the perennial reaches of Kanab Creek. A large part of the area is north of the wells which supply culinary water for Kanab. The area is used for livestock grazing and recreation.

East of Bryce

The East of Bryce inventory area is located in western Garfield County between Bryce Canyon National Park and the town of Tropic. The area is composed entirely of public land. The area consists of a portion of a large mesa providing overviews of Tropic Valley to the east and Bryce Canyon National Park to the west. Several moderate drainages cut into the mesa from the south and east. The vegetation is predominantly pinyon and juniper woodland on the mesa top and finger ridge, with sagebrush and shrubs on the south and east hillsides. The area is used for recreational opportunities including hiking, backpacking, and photography from access points within Bryce Canyon National Park.

RESOURCE USES

The public lands administered by the KFO are managed for multiple uses. Multiple use management includes the management for resource uses and as well as resource values (see Glossary). Resource uses involve activities that utilize the natural, biological, and/or cultural components of the decision area; such as mineral development, livestock grazing, forestry and woodland harvest, and recreation. The decision area is valued as the few remaining lands in the area where traditional commercial uses and relatively unrestricted recreational activities can still occur. These lands are considered by many to be vital to

meeting the developing needs of neighboring communities, private lands, and contributing to the economic and social well-being of the area.

The following sections will discuss resource uses in the decision area and will include, where information is available, a discussion of the following three factors:

- Current Use: Level and locations of use
- Forecast: Anticipated demand for use—the RFD
- Key features: Areas of high potential for use.

Forestry and Woodland Products

There are approximately 478,000 acres available for forest and woodland product harvest in the decision area. Fuelwood is the largest use of forest or woodland resources. Individuals cutting firewood for personal use represents the greatest demand on the woodland resource. Historically, pinyon pine has been the preferred species for fuelwood. More recently, juniper is increasingly used for fuelwood. Seasonal Christmas tree harvesting by local residents is also a common use of the woodland resource. Table 17 shows the amount of woodland products harvested over the past four years. Based on existing demand for harvest, forest and woodland resources provide ample opportunities for harvest of woodland products (i.e. post, fuelwood, Christmas trees).

Harvesting trees for posts is another type of woodland product. Posts are generally found on the more productive pinyon-juniper sites where the soils are deep and well-drained.

Table 17. Woodland Product Harvest

Woodland Product	2001	2002	2003	2004
# Cords of Fuelwood	574	462	598	605
# Cedar Posts	3,553	3,547	2,490	3,347
# Christmas Trees	149	142	94	87

Source: Kanab Field Office Files

Livestock Grazing

The Kanab, Utah, area was settled in the 1860s. While some farming did occur, settlers found the area more suitable for livestock grazing than subsistence farming because of the primitive and harsh conditions. There was neither intensive grazing management on the public lands nor established livestock numbers or seasons of use during this early settlement period. As a result, the number of cattle, sheep, and horses rapidly increased until the early 1900s. During this period of rapid stock increase, livestock grazing became a regulated and permitted activity on National Forests. Non-forest Federal lands continued to be treated as a “commons,” in which those who moved their stock onto the range first each season secured the use of new forage growth. During this period of unregulated use, rangeland resources and ecological conditions experienced significant harm from overgrazing. Overgrazing resulted in changes to vegetation communities, especially at lower elevations that were used for winter grazing. Control of these ranges did not occur until 1934. After the enactment of the Taylor Grazing Act in 1934, grazing allotments were created and the number and kind of livestock and season of use were established for the area. In 1946 BLM was established. During the late 1950s and early 1960s, range surveys were completed on the public lands to determine the amount of forage being produced. Following these

surveys, grazing capacity for the allotments was adjudicated. The number of livestock authorized on most of the allotments was decreased to meet sustained rangeland production objectives.

A Federal court agreement on April 11, 1975 required BLM to prepare Grazing EISs on public grazing lands over a ten-year period. To comply with this agreement, the Kanab/Escalante Grazing EIS was prepared in 1981 and adjustments in number and season of use occurred using this data.

There are a total of 119 allotments in the decision area (Map 13), that include BLM-administered land, and land managed by other Federal agencies, the State of Utah, and private entities. The Kanab Field Office has administrative responsibility for the Federal acres within these allotments. Table 18 lists these allotments, each allotment's Federal acreage, the kind of livestock permitted for the allotment, the active preference allotted to domestic livestock, and the forage available for wildlife.

Table 18. Livestock Grazing Allotments

Allotments	Number	Federal Acres	Livestock Kind ¹	Active Livestock Preference	Available Wildlife AUMs	Total AUMs Allocated
Alton	24002	392	C	5	5	10
Art Canyon	24003	8,927	C	352	344	696
Bald Knoll	24004	6,741	C	215	148	363
Barracks Point	24005	8,140	C	170	262	432
Big Flat	15031	6,464	C	529	*	529
Black Mountain	24007	1,255	C	42	78	120
Brown Canyon	24011	1,591	C	122	46	168
Buck Knoll	24012	4,134	C	153	300	453
Buck Pasture	24013	2,708	C	100	64	164
Bunting Canyon	14014	339	C	4	6	10
Burnt Cedar Point	24015	3,054	C	105	180	285
Burnt Flat	24016	897	C	20	48	68
Carmel Junction	24021	3,356	C	14	21	35
Cave Creek	24092	645	C	16	61	77
Chris Spring	34022	7,265	C	216	160	376
Circleville Canyon	00809	4,280	C	88	*	88
Clay Flat	24023	5,286	C	210	119	329
Coal Hollow	04165	536	C	22	**	22
Coal Mine	24024	250	C	4	6	10
Cogswell Point	04156	10	C	0	**	0
Coop Creek	24025	477	C	20	15	35
Cottonwood Spring	24027	7,888	C	555	183	738
Cougar Canyon	24028	1,468	C	55	36	91
Cove (Alton)	24029	158	C	10	21	31
Cove (Circleville)	00810	12,662	C	231	9	240

Allotments	Number	Federal Acres	Livestock Kind ¹	Active Livestock Preference	Available Wildlife AUMs	Total AUMs Allocated
Dog Valley	00812	9,704	C	336	*	336
Driveway	00011	860	C	20	18	38
Dry Lake	24033	1,796	C	74	94	168
Dry Wash	24034	1,977	C, H	206	80	286
Dump	24032	215	C	8	12	20
Eight Mile Gap	24035	571	C	15	27	42
Eight Mile Pass	05304	440	C	17	**	17
Elbow Springs	24037	2,352	C	50	77	127
Elephant Cove	24038	7,604	C	432	304	736
F.A.R.	24046	4,492	C	100	115	215
Farm Canyon	24040	3,262	C	243	122	365
Fish Tail	24042	3,039	C	230	87	317
Flume Hollow	24045	806	C	7	37	44
Gardner Hollow	24049	2,192	C	30	87	117
Glendale Bench	24051	1,735	C	130	170	300
Gordon Point	14098	329	S	40	47	87
Graveyard Hollow	25048	1,206	S	75	*	75
Harris Flat	24058	4,292	C	268	181	449
Hawkins Wash	15005	7,878	C	552	*	552
Hay Canyon	04155	709	C	50	60	110
Hillsdale	25035	1,483	C	140	*	140
Hogs Heaven	04154	1,404	C	50	136	186
Isolated Tracts	14062	1,028	C	65	89	154
John. R. Flat	24063	9,862	C	258	291	549
Johnson Spring	00012	618	C	15	**	15
Johnson Ranch	24066	5,118	C	265	110	375
Kanab Creek	24067	4,023	C	85	138	223
Kanab Creek Custodial	00005	65	C	9	***	9
Kane Springs	24068	15,271	C	253	457	710
Kinnikkinnic Spring	14069	5,031	C	90	167	257
Levanger Lakes	14070	872	C	33	43	76
Limekiln Creek	15029	3,773	C	70	*	70
Limestone Canyon	25047	1,535	C	67	*	67
Lost Spring	24074	1,028	C	4	15	19
Lower Herd	04101	820	C	25	61	86
Lower Hog Canyon	14075	2,486	C	52	33	85

Allotments	Number	Federal Acres	Livestock Kind ¹	Active Livestock Preference	Available Wildlife AUMs	Total AUMs Allocated
Lower North Fork	04157	813	C	10	36	46
Lower Sink Valley	04112	2,441	C	35	***	35
Lydia	24077	2,083	C	58	171	229
Lydia's Canyon	24010	466	C	0	41	41
Marshall Canyon	25027	909	C	150	*	150
Meadow Canyon	24080	6,061	C	25	132	157
Mill Creek	00010	12,209	C	301	429	730
Muggins Flat	04162	638	C	12	13	25
Neuts Canyon	24087	2,419	C	112	237	349
North Fork	04160	366	C	15	14	29
Oak Springs	14088	2,797	C	87	121	208
Old Fort	14089	2,202	C	7	20	27
Orderville Gulch	24090	4,824	C	200	366	566
Pine Spring	24093	8,498	C	448	30	478
Poverty Flat	24094	9,603	C	416	400	816
Red Butte	24095	5,046	C	196	226	422
Red Canyon	14096	11,910	C	448	417	865
Red Hollow	14097	1,156	C	40	76	116
Red Knoll	04140	5,879	C	175	243	418
Robinson Creek	14099	524	C	24	37	61
Rock Canyon	25046	8,281	C	484	*	484
Rocking Chair	14100	1,572	C	61	175	236
Roller Mill	15030	1,883	C	184	*	184
Sagehen Hollow	25045	5,812	C	444	*	444
Sandy Creek	25052	8,461	C	688	*	688
Sanford Bench	25028	9,570	C	1,081	*	1,081
Saw Mill	25049	539	C	30	*	30
Seeps	14107	2,199	C	30	281	311
Sethy's Canyon	04108	7,295	C	262	224	486
Sevier	15006	652	C	34	*	34
Sevier River	25036	2,308	C	340	*	340
Shearing Corral	00007	4,023	C	100	*	100
Sheep Spring	04142	3,474	C	223	111	334
South Canyon	25044	18,355	C	900	*	900
Spencer Bench	04113	7,023	C	97	160	257
Spring Hollow	04151	573	S	9	0	9

Allotments	Number	Federal Acres	Livestock Kind ¹	Active Livestock Preference	Available Wildlife AUMs	Total AUMs Allocated
Spry	05007	8,528	C	449	*	449
Sugar Knoll	04117	2,686	C	112	48	160
Sunny Side	04118	410	C	14	14	28
Sunset Cliffs	04103	2,014	C	188	*	188
Syler Knoll	04122	442	C	6	16	22
Table Mountain	04104	2,296	S	89	181	270
Tebbs Hollow	25053	3,961	C	80	*	80
Thompson Point	04123	1,549	C	64	39	103
Three Mile Creek	25051	2,666	C	200	*	200
Toms Canyon	04164	240	C	5	***	5
Trail Canyon	04125	6,924	C	110	158	268
Trail Well	14126	1,329	C, H	88	16	104
Upper Hog	04128	4,183	C	100	98	198
Upper North Fork	04158	714	C	10	73	83
Upper Place	04129	1,581	C	23	69	92
Upper Sink Valley	04163	4,806	C	311	141	452
Virgin River	04131	3,922	C, H	230	122	352
Water Canyon	04132	3,398	C	48	51	99
Willis Canyon	04143	1,675	C	16	13	29
Yellowjacket	04137	7,378	C	241	315	556
Zion	04138	11,085	C	270	519	789
Zion Park	04159	1,263	C	0	42	42
TOTAL		434,713	-	18,002	11,045	29,047

Notes:

1 - Livestock Kind Key: C = cattle; H= horse; S=sheep

* - For Allotments within the CBGA RMP, big game will be provided 1,220 AUMs of forage in the short term and up to 2,042 AUMs of forage in the long term. However, these AUMs are not allotment specific, but allotted plan wide.

** - Wildlife AUMs not allotted in these Allotments.

*** - Wildlife AUMs included in adjacent allotment.

Sources: Kanab Field Office Grazing Files

In 2004, there were 121 permits to use these allotments. Grazing permits are usually issued for a 10-year period and periodically undergo a renewal process. Active preference, or the maximum number of Animal Unit Months (AUM) available for use given appropriate conditions, is identified by permit during this renewal process. Grazing allotments are monitored periodically to ensure proper stocking rates so as not to overgraze forage on the allotments. In addition, allotments are inventoried periodically and evaluated to determine if standards are being met and whether they comply with the Standards for Rangeland Health. Livestock grazing is managed in accordance with *Standards for Rangeland Health* and *Guidelines for Grazing Management for BLM Lands in Utah*. By regulation, if the Standards for Rangeland Health are not being met, and livestock grazing is determined to be a significant contributing factor, appropriate actions must be taken which will result in significant progress towards meeting the Standards within times frames specified in the regulations.

Although active preference in the decision area is 18,002 AUMs, licensed use, which is forage the permittees paid to use in a given season or year, was only 6,097 AUMs (33.5 percent of active preference) during fiscal year 2004. Over the past five years, licensed use has averaged 40 percent of active preference. This discrepancy between active preference and licensed AUMs is attributable to a number of variables. Seasonal changes in precipitation and temperature result in more or less available forage. Over the last five years, the area has experienced drought conditions, requiring a reduction in grazing use to maintain range condition. In addition, fluctuations in the beef or sheep markets can make grazing less profitable. Permittees may also take voluntary nonuse for a variety of reasons, resulting in AUMs that are available but not licensed for livestock use. These variables can result in the perception that forage is being underutilized, when actually the range is simply being managed for a sustained forage yield. The majority of forage use is attributed to cattle (over 97 percent of allotments with 115 allotments) with sheep (less than 3 percent of allotments on four allotments) and horses (more than 2 percent of allotments on three allotments) comprising the remainder of domestic livestock use. Domestic livestock forage use over the last ten years is shown in Table 19.

Table 19. Comparison of Total Permitted Use to Active Use

Year ¹	Number of Operators			Licensed Use		
	Cattle & Horse	Sheep & Goats	Total ²	Cattle & Horse	Sheep & Goats	Total
1994	86	7	86	17,349	246	17,595
1995	88	8	89	19,096	215	19,311
1996	89	8	90	21,677	279	21,956
1997	97	7	96	22,572	379	22,951
1998	94	8	94	21,486	215	21,701
1999	92	8	94	19,013	215	19,228
2000 ³	77	7	81	8,304	197	8,501
2001 ³	74	6	77	10,653	153	10,806
2002 ³	73	6	77	6,431	161	6,592
2003 ³	68	6	74	4,831	163	4,994
2004 ³	66	2	68	6,005	92	6,097
Average⁴	71.6	5.4	75.4	7,244.8	153.2	7,398

Notes:

1 – Figures are by Federal government fiscal year (October 1 – September 30).

2 – Difference between total permits and operators denotes some operators with multiple permits.

3 – The 1996 designation of GSENM did not reduce the number of Allotments administered by the KFO until FY 2000. Current administration of allotments by GSENM and KFO began in FY 2000. Prior to FY 2000 use figures include the existing decision area and GSENM. After FY 2000 (inclusive), use data represents livestock grazing only in the decision area administered by the KFO.

4 – Average is limited to the last five years of sole Kanab Field Office administration. It should be noted that trends extrapolated from these data are not necessarily representative of average conditions, as the area experienced drought conditions from 1999-2004.

Source: Kanab Field Office Grazing Files

As stated above, livestock grazing use within the region has significantly decreased from the peak in the early part of the last century. For the most part, these declines have been due to reducing use to more closely reflect the range's carrying capacity, thereby improving rangeland health. Present levels of demand for forage resources are anticipated to continue. More than 80 percent of the area is functioning at 25 to 75 percent of potential natural community, and more than 35 percent of the range condition is improving. In the short term, licensed use in the decision area is anticipated to increase due to improving

range condition and range recovery from recent drought. In the long term, forage demand is anticipated to continue at historic levels.

Recreation

The planning area is divided into three very distinct physiographic subdivisions—the Grand Staircase, the Kaiparowits Plateau, and the Southern High Plateaus. The types of recreational opportunities are in direct relationship to the unique characteristics of these subdivisions. Recreation activity occurs in developed and undeveloped areas, in both the front and back country.

Management of recreation is guided by BLM regulations and policy, a number of federal and state laws, current and emerging trends in public demand for activities and opportunities, and the physical and natural environment surrounding any given area. The intent of the various laws, policy and guidelines is to meet public demand for outdoor land-based recreation opportunities, while preventing or minimizing adverse impacts to the natural and cultural elements of Utah's public lands.

Recreation Visitation

BLM reports estimates of recreation visitation using the Recreation Management Information System (RMIS). RMIS estimates recreation participation in 65 types of recreation activities recorded at BLM sites and areas, based on registrations, permit records, observations, and professional judgment. Visitation is estimated by number of participants as well as visitor days. Participants are the actual number of people who take part in a recreational activity. A visitor day is a common recreation unit of measure used among Federal agencies and represents an aggregate of 12 visitor hours at a site or area. Table 20 displays the RMIS figures for the decision area for fiscal years 2001 – 2004.

It is important to note that the visitation figures shown in Table 20 are estimates. Many areas lack direct visitation monitoring facilities such as traffic counters or visitor registers. Direct BLM staff monitoring is focused on areas of greater use or conflict. Due to the remote nature of much of the decision area this results in many more of the remote areas not receiving frequent monitoring by BLM staff. Additionally, many of the popular use areas/trails are not designated and there is currently no way to accurately determine the actual amount of recreational use these areas receive. Therefore, the RMIS numbers do not reflect actual visitation occurring in any given year for specific activities in specific areas, nor can they identify the origin of changes in use patterns (i.e. changes in local use patterns or changes in numbers or types of non-local users).

Table 20. Recreation Visitation

Activity	Oct 1, 2000-Sep 30, 2001		Oct 1, 2001-Sep 30, 2002		Oct 1, 2002-Sep 30, 2003		Oct 1, 2003-Sep 30, 2004	
	Participants	Visitor Days	Participants	Visitor Days	Participants	Visitor Days	Participants	Visitor Days
Backpacking	12,027	60,071	30,008	150,021	15,000	75,000	15,711	78,555
Bicycling – Mountain	500	250	621	312	751	376	844	425
Camping	8,882	19,063	9,903	21,798	11,509	25,665	12,360	27,748
Hiking/walking/Running	15,782	10,798	34,026	25,900	19,644	13,688	20,720	14,234
Horseback Riding	2,258	865	2,696	1,048	3,235	1,303	3,468	1,348
Hunting – Big Game	18,247	23,660	22,256	28,879	27,108	35,278	29,815	38,792
OHV – Cars/Trucks/Sport Utility Vehicles/ATVs	37,391	24,264	43,950	27,930	51,800	32,267	56,102	34,604
Picnicking	832	347	649	270	640	267	659	275
Racing – Horse Endurance	0	0	0	0	0	0	67	134
Snow Play – General	2,260	732	2,720	883	3,300	1,075	3,612	1,178
Staging/ Comfort Stop	11,802	984	11,834	986	13,019	1,085	14,558	1,213
Viewing – Other	11,020	3,453	13,404	4,324	16,448	5,325	17,982	5,839
Total	121,001	144,487	172,067	262,351	162,454	191,329	175,898	204,345

Source: BLM 2005b (RMIS)

During the past several years, participation in some recreational activities has substantially increased. More recreationists participate in OHV riding than any other use, although backpackers spend more visitor days in the area. Other common recreation activities, either in number of participants or in visitor days, are big game hunting, hiking, camping, and viewing nature.

Increased recreation use within the decision area can be attributed to increased visitation to the neighboring state and national parks, GSENM, and other surrounding recreation areas. The increase in recreation use can also be attributed to the population growth in Kane County and neighboring areas, particularly St. George, the Wasatch Front, and Las Vegas, Nevada.

Recreation activities are common in spring, summer, and fall; however, the area has been experiencing a steady increase in winter recreation. For example, the Coral Pink Sand Dunes has become a heavily used tubing area by local residents.

OHV use has become one of the fastest growing recreational activities. Consequently, existing management that addresses OHV use levels from more than 20 years ago is often inadequate. Because of the significance of OHV use, it will be addressed in the Transportation section.

There are many areas within and near the decision area that provide unique recreational opportunities. Many of these areas have become high-use recreational destination areas. Coral Pink Sand Dunes State Park, established in 1963, encompasses 3,730 acres. It provides a unique setting for camping, hiking, and OHV use. In 2002, the Utah State Parks and BLM partnered to manage the Coral Pink Sand Dunes resources and recreational facilities. Both agencies formed a formal agreement which aimed to ensure that the area's outstanding natural features were adequately protected from the adverse impacts of recreational use, and to provide sustainable public recreation opportunities consistent with the management recommendations jointly developed by both entities.

Other parts of the decision area that have been identified as receiving increased recreational use include the Paria Canyon-Vermilion Cliffs Wilderness, the Parunuweap Canyon WSA, and the Orderville Canyon WSA. It should also be noted that adjacent national parks (Zion and Bryce Canyon) have experienced increased visitation and are now experiencing visitor overflows. Consequently, many of these displaced recreationists are seeking additional recreation and camping opportunities outside of these areas and are turning to the nearby public lands to serve their needs.

Recreation Management Areas

Recreation Management Areas are BLM's primary means of managing recreational use of the public lands. Public lands are either designated as a Special Recreation Management Area (SRMA) or Extensive Recreation Management Area (ERMA). SRMAs are areas that require a recreation investment, where more intensive recreation management is needed, and where recreation is a principal management objective. These areas often have high levels of recreation activity or are valuable natural resources. ERMAs constitute all public lands outside of SRMAs and other special designation areas. ERMAs are areas where recreation is nonspecialized, dispersed, and does not require intensive management. Recreation may not be the primary management objective in these areas, and recreational activities are subject to few restrictions. There are no designated SRMAs in the decision area.

Special Recreation Permitting

As authorized by the Land and Water Conservation Fund (LWCF) Act, there are five types of uses for which special recreation permits (SRP) are required—commercial, competitive, vending, individual or group use in special areas, and organized group activity and event use.

BLM issues SRPs for noncommercial use in certain special areas, including wilderness, river use, and backcountry hiking or camping areas or any area where it is determined that resources require special management and control measures for their protection and a permit system for individual use would achieve management objectives. BLM issues noncommercial recreation use permits for individual use of fee-site campgrounds and for activities such as large noncommercial group activities. BLM issued 42,010 RUPs in 2004.

Commercial SRPs are issued to outfitters, guides, vendors, recreation clubs, and commercial competitive event organizers that provide recreational opportunities or services without employing permanent facilities. SRPs for competitive and organized group events are also included in this category. SRPs may be issued for 10 years or less, with annual renewal. The permits are issued to manage visitor use, protect natural and cultural resources, and accommodate commercial recreational uses. BLM issued 21 SRPs in 2004.

Developed Recreation Sites

Developed recreation sites incorporate visitor use infrastructure, defined in the *Utah Standards for Public Land Health Guidelines for Recreation Management* as amenities such as roads, parking areas, and facilities, to protect the resource and support the recreation user in his or her pursuit of activities, experiences, and benefits. Visitor use infrastructure is a management tool that can minimize resource impacts, concentrate use, and reduce visitor conflicts. Developed recreation sites help accomplish these goals.

There are two developed campgrounds found within the planning area, Ponderosa Grove and Whitehouse Campgrounds. Ponderosa Grove Campground is located along Hancock Road between Highway 89 and Yellowjacket Road, and is adjacent to Moquith Mountain WSA. It has seven individual sites and two group sites with parking available at each site. Facilities include vault restrooms, picnic tables, fire pits, and trash cans. There is no water available. Whitehouse Campground is located about two miles by gravel road from Paria Contact Station, off Highway 89, about 45 miles east of Kanab. It is 100 yards from the Paria River and has five individual sites with one common parking area. Facilities include vault restrooms, picnic tables and grills. There are no trashcans and there is no water available. While the KFO administers both the Paria Contact Station and Whitehouse Campground, they are actually located within GSENM.

Transportation

Development of the existing transportation system in the decision area has been associated with providing access for resource uses such as mineral development, livestock grazing, and recreation. Increased demand for access to public lands, combined with the research on the impacts of roads to resources and resource uses, has increased the need for a well designed and managed transportation system. There are no backcountry airstrips in the decision area.

The transportation system includes state, county and BLM system roads, some of which receive regular maintenance. For portions of the transportation system roads that cross BLM-administered land, various government entities and individuals acquire ROWs from BLM. Issuance of ROWs is based on access needs and resource considerations. State and county system roads (depending on class of the road) are usually constructed and maintained to higher standards than BLM roads and provide the primary arterial and collector road systems for access to and through BLM lands. These larger roads are not maintained by BLM.

In addition to these arterial and collector routes, there are numerous smaller routes laced throughout the decision area that connect more remote locations to the larger roads. These routes are used for recreational purposes, access for mineral development, access to inholdings and for range improvements. Most of these routes are not paved; they are of native surface (dirt, gravel, or sand). There are an estimated 918 miles of currently mapped routes; this was determined using digital line graph Geographic Information System (GIS) files, clipped at 1:24,000 scale to BLM surface. Other GIS coverages suggest that this number may be considerably underestimated and the actual figure could be as much as twice this estimate.

Public concern over management of these non-arterial routes has increased in the past decade. One of the major issues concerns potential ROWs and management responsibility. Revised Statute 2477 (RS-2477), contained in the 1866 Mining Law, was intended to facilitate settlement of the West by granting the ability for counties and states to assert a “right-of-way for the construction of highways over public lands.” Congress repealed RS-2477 when FLPMA was enacted in 1976. Since then, it has been an ongoing issue between the Federal government, counties, and states as to which routes were developed in the West under the RS-2477 authority and thus are the responsibility of the counties. In 1997, Congress directed the Department of the Interior not to issue any new regulations on RS-2477. The Department of the Interior and the State of Utah signed a MOA in April 2003 that established a process to resolve the disputed routes. According to the agreement, routes could be resolved under an existing recordable disclaimer rule to clarify the title to the route if the Secretary of the Interior finds no Federal interest in a given route. The Utah agreement has since been challenged in court, and as a result has not been used in the Utah BLM land use planning process.

Off-Highway Vehicles

OHVs are used within the area for recreational and nonrecreational use. Much of the nonrecreational OHV use, or administrative use, involves OHVs driven by local ranchers for administration of their grazing operations. Administrative OHV use occurs in association with permitted uses as described above, and as such will not be addressed through this planning process. OHV use has become a popular method of recreation in itself, as well a means of transportation while hunting, fishing, or camping, and it is described in the following section.

Growth of OHV use has become a significant issue because of the number of users who participate in this recreation opportunity, as well as concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. During public scoping, more than 25 percent of all comments received related to transportation and access or OHV use. Over the past twenty years, OHV use has become one of the fastest growing recreation activities in southwest Utah, drawing thousands of visitors each year. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, diverse backcountry opportunities and spectacular scenery that the area provides, and to experience the challenging OHV opportunities the landscape provides. This is evident by an increased demand for SRPs for group OHV events over the past two to three years. This trend is expected to continue.

The number of OHV registrations in Utah has grown significantly over the past several years. Registrations in Garfield and Kane Counties have grown as well. Local and Statewide OHV registrations are shown in Table 21. The registration data shows why OHV use is perceived as one of the fastest growing activities. With more OHVs being registered, it stands to reason that more are being used. Unfortunately, visitation data on OHV use can be particularly difficult to collect because of the dispersed nature of the activities. Additionally, registration numbers may not accurately portray actual OHV use. The actual number of OHV users could be higher based on use of registered OHVs from outside the planning area.

Table 21. OHV Registrations by County, 1998 - 2004

County	1998	1999	2000	2001	2002	2003	2004	% Change 1998-2004
Garfield	267	297	359	353	585	569	745	179%
Kane	306	410	428	499	777	873	1,167	281%
State of Utah	51,686	80,469	91,596	95,569	127,556	124,954	161,350	212%

Source: DNR 2004

When the existing LUPs were completed, the level of OHV use in the decision area did not warrant extensive management restrictions. As a result, much of the area is open to cross-country use, although the majority of use occurs along existing routes, ways, or other areas that are already disturbed. OHV management in some areas no longer adequately addresses the issues that have arisen due to increased OHV use which has resulted in some conflicts. Conflicts between OHV use and livestock grazing, non-motorized recreation, wildlife, and other sensitive values were identified during public scoping. The concern was raised that increased OHV use should be planned for in terms of providing a transportation system with varied opportunities (both motorized and non-motorized). Several Federal, state and county agencies in the region have cooperated in developing trail systems to provide these varied opportunities. The Paiute All-Terrain Vehicle and Great Western Trail Systems to the north and east of the planning area are an example of trail systems that allow for increased OHV use while minimizing impacts. In cooperation with State and Federal agencies (including the BLM), the Garfield County Trails group is currently designing a county-wide system of motorized and non-motorized trails to meet local needs and attract the recreating public as an economic enhancement for the county. Local OHV clubs have also been working with BLM to sign and manage OHV use in the Hog Canyon drainage near Kanab. These efforts reflect the demand for OHV opportunities.

Although most of the decision area is open to cross-country OHV use (Map 14), some specific locations receive intensive OHV use based on landscape characteristics, accessibility, or support facilities. One such area is Coral Pink Sand Dunes State Park and the adjacent public lands. Intensive use in and around the Coral Pink Sand Dunes has resulted in changes in management over the past ten years to decrease impacts from OHV use. An emergency closure, followed by an amendment to the Vermilion MFP addressed such impacts. Other emergency orders (Map 14) were the result of addressing impacts in WSAs and the Hog Canyon area (see Transportation section in chapter 3).

The Sand Hills area, located just north of Kanab, receives intensive OHV use. Increasing OHV use in this area, currently managed as open to cross-country use, has resulted in impacts to resources and conflicts between public land users.

Lands and Realty

The lands and realty program is a support program to all other resources and resource uses. The goals of the lands and realty program are to manage the public lands to support the goals and objectives of other resource programs, provide for uses of public lands in accordance with applicable laws and regulations while protecting sensitive resources, and improve management of the public lands through land tenure adjustments. The program responds to requests for rights-of-way (ROWs), permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow and the demand for use of public lands increases. As a result, future management of the lands and realty program will likely become more intense, complex, and costly.

The primary responsibilities of the lands and realty program include land tenure adjustments, withdrawal review, ROWs, and other land use authorizations. The following sections describe the current conditions and status of lands and realty within the decision area.

The planning area is comprised of approximately 2,911,600 acres, of which 554,400 acres (19 percent) are BLM-administered public surface lands. Approximately 406,400 acres are privately owned, 185,400 acres are administered by the State of Utah, and 1,765,400 acres are administered by other Federal agencies (Map 1 and Table 22). The Bankhead-Jones lands are special use lands administered by USFS and BLM, which provide for endowment and support of colleges for the benefit of agriculture and the mechanic arts.

Table 22. Surface Land Ownership in the Planning Area

Ownership	Acres
BLM	554,400
Private	406,400
State of Utah	185,400
USFS	1,160,900
NPS	594,000
Bankhead-Jones Lands	10,500
Total	2,911,600

Source: Kanab Field Office GIS

Approximately 4.5 percent of BLM-administered surface is leased for mining. BLM administers the leasing of the mineral estate underlying USFS and Bureau of Reclamation withdrawn lands, although mineral management decisions on these lands are coordinated with the appropriate surface agency. The mineral estate of many of the private land parcels was reserved to the U.S. Government at the time they were patented. In these cases, the mineral estate is administered by BLM and the surface estate is administered by private landowners. Approximately 129,000 acres of the private and state lands are underlain by Federally-owned minerals.

Land Tenure Adjustments

Land tenure adjustments are often associated with accommodating public and private needs, fulfilling State of Utah entitlements, community expansion, consolidating public land, acquiring and protecting important resources, acquiring access to public lands, or serving a national priority. All land tenure adjustments must be in conformance with applicable land use plans and be subject to valid and existing rights. BLM uses several authorities to make land tenure adjustments through disposal and acquisition.

Lands can be disposed of through sales, exchanges, state quantity grants, color of title, state In Lieu selections, desert land entries, Carey Act entries, patents under the Recreation and Public Purposes Act (R&PP) or through Federal legislation. Public lands have potential for disposal when they are isolated and/or difficult to manage. Disposal actions are usually in response to public request, such as community expansion. Disposals result in a title transfer, wherein the lands leave the public domain. All disposal actions are coordinated with adjoining landowners, local governments, and current land users. Disposal actions require a site-specific environmental analysis in accordance with NEPA (unless the disposal is a result of Federal legislation and is exempted from NEPA review). This NEPA analysis may reveal resource conditions that could not be mitigated to the satisfaction of the authorized officer and may

therefore preclude disposal. Public sales are managed under the disposal criteria set forth in Section 203 of FLPMA and the Federal Land Transaction Facilitation Act. Public lands determined suitable for sale are offered on the initiative of BLM unless their disposal was directed by Federal legislation. The lands are not sold at less than fair market value. Specific lands suitable for sale must be identified in the applicable land use plan. Any lands to be disposed of through sale that were not identified in the land use plan would require a plan amendment before a sale could occur. Lands can also be disposed of as directed by Federal legislation. Two examples of this are—

- Legislation was passed in approximately 1986 which included a provision authorizing the sale of public land within the town limits of Kanab City. Approximately 240 acres of public land were sold to Kanab City under this authority.
- In October 1998, President Clinton signed into the law the Utah Schools and Land Exchange Act (P.L. 105-335), which resulted in conveyance of over 47,000 acres of public lands (both surface and mineral estates) within the Kanab Field Office to the State of Utah.

Disposal actions were considered in previous land use plans. The Vermilion MFP identified approximately 100 acres of public lands that would be made available for potential disposal to satisfy the requirements of the Public Sale Act of 1968. However, the recommendation did not consider other requirements that must be met in adjudicating the applications for disposal. The Cedar-Beaver-Garfield-Antimony RMP provided direction to develop a disposal plan in which approximately 1,000 acres of public land within the decision area would be made available for disposal over the life of the plan. A total of 50,495 acres of public land within the decision area have been disposed of (through exchanges, FLPMA land sales, and R&PP sales) since the existing land use plans were prepared. Future disposal actions are anticipated, as lands are identified for consideration for disposal to consolidate public land, facilitate community expansion, and remove from Federal jurisdiction land parcels that are isolated or difficult to manage.

Acquisition of lands can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, purchase, donations or receipts from the Federal Land Transaction Facilitations Act sales or exchanges. Land exchanges are initiated in direct response to public demand, or by BLM to acquire sensitive resources and/or improve management of the public lands. Exchanges are considered on a case-by-case basis, where the exchange is in the public interest and where acquisition of the non-Federal lands will contain higher resource or public values than the public lands being disposed of. A total of 3,393 acres of private and state land within the decision area have been acquired by BLM since the existing land use plans were prepared. Future land acquisitions are anticipated, as opportunities arise to acquire access to public lands and protect important resources.

Withdrawals

A withdrawal is a formal land designation which has the effect of reserving land for a certain use. Withdrawals remove certain public lands from the operation of one or more of the public land laws, excluding lands from settlement, sale, location, or entry, including under the general mining laws and mineral leasing laws. Withdrawals are used to protect major Federal investments in facilities or other improvements, reserve lands for specific proposes and use, support national security, protect resources, and provide for public health and safety. Section 204(l) of FLPMA requires the review of existing withdrawals to determine if they are still serving the purposes for which they were made. If the withdrawals are no longer serving their intended purpose, they are to be revoked and the lands opened or partially opened to the uses that were previously prohibited. If withdrawals are determined to still be meeting the purposes for which they were made, they are recommended for extension for a specific term. While BLM can make recommendations to designate, revoke, or extend withdrawals, only the Secretary has the authority to actually take these actions.

A total of 83 current withdrawals exist within the decision area. Table 23 shows the type, number, and total acres by withdrawal type.

Table 23. Existing Withdrawals within the Decision Area

Withdrawal Type	Number	Acres
Public Water Reserves	80	3,191
Administrative Sites	2	200
Designated Wilderness	1	20,000
Total	83	23,391

Source: Kanab Field Office Lands Records

Rights-Of-Way

A total of 202 ROWs exist within the decision area, authorizing construction, operation and maintenance of power lines, telephone lines and fiber optic cables, irrigation and culinary water facilities and pipelines, mineral material sites, communication sites, ditches and canals, pipelines for mineral resources, roads, highways, and other similar uses (Table 24). These ROWs have been granted to various towns, cities, counties, individuals, companies, organizations, government agencies, and other entities. Whenever feasible, BLM encourages joint use and placement of new facilities in existing use areas that have already been disturbed, such as existing communication sites, roads, and highways. Table 24 shows the type and number of these existing ROWs.

Table 24. Existing Rights-Of-Way within the Decision Area

ROW Type	Number
Roads	70
Power Transmission Lines	59
Communication Uses	10
Telephone Lines	22
Water Facilities ¹	23
Stream Gauging Stations	1
Water Pipelines	12
Oil and Gas Pipelines	1
Misc. ROWs ²	3
Railroads	1
Total	202

Notes: ¹ Includes reservoirs, diversion structures, sediment basins, storage tanks, and associated ditches, canals, pipelines, and/or access roads

² Department of Transportation maintenance shed; trails and trailhead; corral

Source: BLM staff compilation and review of LR2000

Two ROW corridors have been established under previous land use plans with the intent of preventing random proliferation of major industrial transportation and utility systems throughout the planning unit for which they were proposed. The Vermilion and Zion MFPs established a utility corridor which is 33 miles long, one-half mile wide, and covers approximately 9,500 acres of public lands. All types of utility

and transportation systems are allowed within this corridor. The Cedar-Beaver-Garfield-Antimony RMP established one corridor (one mile wide and approximately 8 miles long within the decision area) for power transmission lines. This corridor was analyzed for establishment of power transmission lines and is designated for that purpose. Any use authorization other than for electrical transmission lines will require a separate analysis. One additional utility corridor has also been established by Federal legislation. Public Law 105-355 (enacted in 1998) designated a 740-foot utility corridor along U.S. Highway 89; the portion within the decision area extends from the GSENM boundary north to Mount Carmel Junction.

Although established corridors exist, this does not preclude the location of transportation and transmission facilities in other areas if environmental analysis indicates that the facilities are compatible with other resource values and objectives. Further identification of corridors may not necessarily mandate that transportation and transmission facilities would be located there, particularly if they are not compatible with other resource uses, values, and objectives in and near the corridors, or if the corridors are saturated. ROWs are issued with use stipulations and other mitigation measures to minimize impacts to resources.

Communication sites host communication equipment and facilities for various uses, such as television, radio, microwave, seismograph, cellular, and internet. There are five established communication sites within the decision area, plus one additional site where administrative (i.e., governmental) use only is authorized. Table 25 lists these communication sites and their uses.

Table 25. Communication Sites within the Decision Area

Site Name	Type of Use	User	Acres
<i>Orderville TV Site</i>	Television and FM translators	Western Kane County Special Service District	1.0
	Wireless internet	Xpressweb	
<i>Orderville South</i>	Microwave	South Central Utah Telephone	1.0
<i>TV Hill</i>	Television and FM translators	Western Kane County Special Service District	19.7
	2-way radio	South Central Utah Telephone	0.1
	Cellular	Western Wireless Corp.	
	2-way radio	BLM	10.0
<i>Vermilion</i>	Seismograph	University of Utah	0.1
<i>Hatch</i>	Television and FM translators	Hatch Town Corp.	1.0
<i>Escalante</i>	Cellular	South Central Utah Telephone	0.03

Source: BLM LR2000

Leases, Permits, and Easements

Three different types of leases have been issued within the decision area—R&PP leases, leases issued under Section 302(b) of FLPMA, and airport leases. A total of four R&PP leases exist, authorizing the development and use of a storage facility, shooting range, parking lot, nature park, nature trail, rodeo grounds, mountain park and campsites. In addition, two other areas have been classified as suitable for lease under the R&PP Act. Two airport leases have been issued – one for the Panguitch Airport, and the other for the Bryce Canyon Airport.

Two types of permits can be issued by BLM—permits issued under Section 302(b) of FLPMA and Temporary Use Permits (TUP) issued under the Mineral Leasing Act. Land use permits authorize short-term uses of public land that involve little or no land improvement, construction, or investment. There are currently no authorized permits (Section 302(b) or MLA temporary use) within the decision area.

No easements have been issued by the BLM within the decision area. However, the BLM has acquired 7 easements for roads and trails under authority of FLPMA.

Minerals and Energy

BLM minerals management policy falls into three categories: leasable minerals, locatable minerals, and salable minerals. Leasable minerals include oil and gas, coal, and geothermal resources. Locatable minerals include uranium-vanadium, antimony, gypsum, and limestone. Salable minerals or mineral materials include sand and gravel, stone, clay, and humate. Some information from the Mineral Potential Report for the Kanab Planning Area has been included below. More specific information regarding past and potential development, as well as the reasonably foreseeable development scenario is contained in the Report.

Leasable Minerals

Oil and Gas

Only limited exploration and development for oil and gas has occurred within the planning area. As of 2005, there is only one producing oil field, the Upper Valley field, which was discovered in 1964 (BLM 2005e). Based on the cumulative oil production through 2004, which falls in the range of 25 to 50 million barrels, the field is classified as a medium-sized field. Four coal bed methane holes were drilled in the planning area from 2002 through 2004. There are currently 23 authorized oil and gas leases comprising 65,535 acres of the decision area (Map 15). There are no recent applications for permit to drill (APD) oil and gas wells. One APD is being processed in the Glen Canyon NRA. The decision area is divided into: 1) areas open to leasing, subject to standard lease terms and conditions; 2) areas open to leasing, subject to minor constraints; 3) areas open to major constraints; and 4) areas closed to leasing (Map 16).

Historic drilling rates were used to estimate future levels of oil and gas development. Since the 1960s, approximately 68 oil and gas related wells have been drilled in the region, fifty-seven of which were drilled on Federal mineral estate (Table 26). The last well drilled on Federal mineral estate was in the 1990s.

Table 26. Oil and Gas Wells Drilled in the Kanab Field Office (1960s – 2000s)

Year	Subsurface Ownership		
	Federal	State	Private
1960s	26 (primarily USFS)	1	5
1970s	18 (primarily USFS)	0	2
1980s	10 (primarily USFS)	0	2
1990s	1	0	0
2000s	0	0	4

Source: Sprinkel 1999 (Utah Geologic Survey Digital Geologic Resources Atlas of Utah)

The following five plays have been identified in planning area:

- Late Proterozoic/Cambrian Play
- Paleozoic Devonian-Pennsylvanian Play
- Permo-Triassic Unconformity Play
- Cretaceous Sandstone Play (conventional gas)
- Cretaceous Coal Bed Gas Plays

The Permo-Triassic Play and the Devonian-Pennsylvanian Play are rated high (H) for development potential, and the Cretaceous Sandstone Play (conventional gas) is rated moderate (M) for development potential. The Late Proterozoic/Cambrian Play and Cretaceous Coal Bed Gas Plays are rated low (L) for development potential.

Based on historic drilling rates and development potential, the Utah Geological Survey estimates that reasonable foreseeable development scenario would be 55 new exploration wells and 20 new development wells during the next 15 years. The reasonably foreseeable development scenario includes the discovery of one new petroleum field. Should more fields be discovered, higher levels of drilling and disturbance would likely occur (BLM 2005e).

Coal

Kane County and Garfield County contain 54 percent and 22 percent of Utah's coal resources respectively. Areas of coal potential are shown on Map 17. The Alton coal field is an area of high development potential for coal. The Cannonville and Skutumpah areas of the Alton coal field and the portions of the Kaiparowits Plateau and Kolob coal fields with thicker coals are rated as having moderate development potential, while all other coal-bearing areas are rated as low development potential (BLM 2005e).

There are presently no coal leases within the decision area. In the past, 31 coal leases have been authorized, yet no mining ever occurred prior to termination or expiration of the leases. Currently, one coal lease to surface mine 40 million tons of coal in the Alton coal field is under consideration. Federal coal lands have not been leased, a mine permit does not exist, and no coal sales contracts have been signed, but there is a good chance that coal mining in the Alton area could begin as early as 2009 (BLM 2005e).

Coal production in Kane County was about 70,000 short tons through 1971. No coal production has occurred in either county since 1971 (Utah Energy Office 2004). The Escalante, Paria, Zion, and Cedar-Beaver-Garfield-Antimony MFPs/RMP identified areas unsuitable for coal leasing, based on criteria found in 43 CFR 3461.5 and areas identified as unsuitable in a 1980 Secretarial Decision.

Geothermal

No geothermal resources with high or moderate development potential have been identified in the planning area. Areas of low geothermal potential exist near the Sevier fault and near Quaternary volcanic centers. No development of geothermal resources is predicted to occur in the next 15 years. Geothermal development interest could be affected if renewable energy portfolio standards and incentives are legislatively adopted (BLM 2005e).

Locatable Minerals

There is a low development potential for locatables within the decision area. Presently there are fourteen authorized mining claims in the decision area. Six claims are actively being mined under the authority of

43 CFR 3809, and include one notice of intent and one plan of operations. The operations are small in scale and are associated with alabaster carving stone and septarian concretions (nodules).

Uranium-Vanadium

Little uranium production has come from the planning area. Known deposits are generally small, and low grade, and the potential for finding undiscovered large, high-grade deposits is low. The development potential for uranium-vanadium is rated low. Thus, no exploration or development activity is expected in the next 15 years (BLM 2005e).

Antimony

There have been several mining claims and studies performed on antimony within the planning area. The small size of the identified deposit, plus the remoteness of the area, will make future attempts at producing antimony unlikely. The development potential of antimony is rated low. Thus, no antimony exploration or development activity is expected in the next 15 years (BLM 2005e).

Gypsum

Only small scale mining and minor prospecting for gypsum has occurred (BLM 2005e). The development potential of gypsum is rated as low. Thus, only small scale gypsum exploration and development activity is expected in the next 15 years (BLM 2005e).

Limestone

There has been very little mining of limestone in the planning area, and only minor prospecting for limestone has occurred. The development potential for limestone deposits is rated moderate because the existing deposits lack good resource definition and better-defined deposits occur closer to the major Utah markets. No limestone exploration or development activities are expected in the planning area in the next 15 years (BLM 2005e).

Septarians

Active mining for septarian nodules is occurring on BLM mining claims and State of Utah gemstone leases in the Mt Carmel area. Development potential is rated high at mine prospects and moderate in other areas where concretion-bearing Tropic Shale is present. Increasing exploration and development activity is expected.

Salable Minerals

There are presently 16 BLM mineral material pits authorized within the decision area. Twelve of the pits are available to the public; four are only available for Federal Highway Administration use. On average, 30-50 over-the-counter mineral permits are issued annually.

Sand and Gravel

Sand and gravel have been some of the most significant mineral commodities mined from the planning area (Doelling et. al. 1989). The single greatest use has been for highway construction (Doelling 1975; Doelling et. al. 1989), and most past mining has been near existing roads. With the creation of Grand Staircase-Escalante National Monument in 1996, future sand and gravel production from Garfield and Kane Counties will be focused even more on the planning area since mineral material disposals are no longer authorized.

The development potential for sand and gravel deposits in the planning area is rated as high in areas of past or present sand and gravel extraction, as well as where the proper host formations are found within three miles of a paved road. Sand and gravel development potential is moderate where the host formations are more than three miles from a paved road, and low where the host formations are administratively restricted from future development. Continued exploration and development activities for sand and gravel are expected in the planning area in the next 15 years at a level that increases slightly from past rates. Most of the activity would be in the areas of high development potential, but some would also occur farther from paved roads to allow maintenance of unpaved county roads (BLM 2005e).

Stone

Early settlers in the planning area used field stone and quarry stone mostly for home and building construction. A small number of building/dimension stone quarries remain active and there are several that are inactive or abandoned. In addition, there are a small number of decorative stone quarries, as well as quarries for rip-rap. The development potential for stone is rated as high at past and present quarry sites and moderate outside these areas where the proper host formations occur. Stone exploration or development activity is expected to continue during the next 15 years at rates slightly higher than historic activity levels (BLM 2005e).

Clay

Several small mines are known to have produced clay from the Garfield County portion of the planning area (Doelling 1975). The development potential for clay is rated as high at past and present extraction sites and moderate outside these areas where the host formations are present. No clay exploration or development activity is expected during the next 15 years (BLM 2005e).

Humate

No known exploration or development activities for humate have occurred in the planning area. The development potential for humate is rated as low. No humate exploration or development activity is expected during the next 15 years (BLM 2005e).

Renewable Energy Resources

As part of BLM's proposed National Energy Policy Implementation Plan, BLM and the Department of Energy's National Renewable Energy Laboratory conducted an assessment of renewable energy resources on BLM lands in the western U.S. The results of the assessment were published in a recent report, *Assessing the Potential for Renewable Energy on Public Lands, 2003*. The BLM/National Renewable Energy Laboratory team used GIS data to assess the potential for concentrating solar power (CSP), photovoltaics, wind, biomass resources, and geothermal energy on public lands. The team employed several GIS data screening criteria to consider factors that would impact the economic and technical feasibility of renewable power production. This would help to determine the true potential of an area to produce renewable energy. Screening criteria used in the assessment included access to roads and transmission facilities, available land surface, site condition, land use restrictions, distance to population centers, government policies, and regional market conditions. The primary goal of the assessment was to identify BLM planning units in the western U.S. with the highest potential for development of renewable energy.

The results of the assessment indicate that the decision area is not considered an area of overall high potential for development of renewable energy, although it is identified as having some potential for renewable resources. The raw potential for solar, wind, and biomass energy are quite high in some

portions of the decision area; however, the potential for development of these resources declines considerably when the data screens are applied. This indicates that the energy resources are present, but various factors would reduce the concentration, production, and transmission of this energy. There are no renewable energy facilities currently present.

Direct solar power is considered high throughout the decision area (5 to 6 kilowatt hours per square meter per day), with particularly high concentrations in the eastern portion (7 kilowatt hours per square meter per day). This potential is reduced to relatively small areas in the southwestern and northwestern portions of the decision area (with a CSP of 5 to 6 kilowatt hours per square meter per day) once the data screens are applied. The same is true for concentration of photovoltaics, which is directly related to CSP. Wind energy as high as Power Class 6 is present in the northern and northwestern portions. This potential area is reduced to include only the northwestern corner (with Power Class rankings of 4 to 6) once the data screens are applied. However, this small area of high wind energy could be a high potential production area. The decision area appears to have potential for biomass energy production in the northern and west-central portions, which is relatively unaffected by the data screens. This was not identified as an area with any measurable potential for geothermal energy production. Although the decision area was not identified as an area with overall high potential for renewable energy production, the results of the assessment show that the area does have some potential to produce such energy, which could increase in importance as the demand for renewable energy increases.

SPECIAL DESIGNATIONS

Special designation areas are designated to protect or preserve their unique values or uses. These areas therefore require different management than would be applied to the surrounding public lands. This section identifies the various special management areas within the decision area and addresses the qualities or uses that have resulted in their designation. The types of special designation include Areas of Critical Environmental Concern (ACECs), Wilderness, WSAs, Wild and Scenic Rivers (WSR), and scenic byways.

Areas of Critical Environmental Concern

ACECs are defined in FLPMA, Section 103(a) as “areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards”. BLM prepared regulations for implementing the ACEC provisions of FLPMA. These regulations are found at 43 CFR 1610.7-2. The BLM also developed policy on ACECs that can be found in 45 FR 57318 and BLM Manual 1613.

There is one existing ACEC, the 225-acre Water Canyon/South Fork Indian ACEC, in the southwest corner of the decision area (Map 18). While the ACEC is considered a single ACEC it is divided into two separated portions. The 55-acre South Fork Canyon is the northern portion of the ACEC, while the 170-acre Water Canyon is the southern portion. Established in 1986, the relevant and important (R&I) values for which the ACEC was designated include relict desert riparian vegetation, wildlife and scenic values.

An ACEC’s management is determined at the time of its designation and serves to protect the R&I values. ACECs are also protected by the provisions of 43 CFR 3809.1-4(b)(3), which require an approved plan of operations for activities under the mining laws except for casual use.

National Trails

National Historic Trails are “extended trails which follow as closely as possible and practicable the original route or routes of travel of national historical significance” (NPS 2001a). The purpose of the National Historic Trails is “the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment” (NPS 2001a).

The Old Spanish Trail, designated December 4, 2002 by the Old Spanish Trail Recognition Act of 2002, is a 2,700-mile long trade route extending from Santa Fe, New Mexico, to Los Angeles, California, passing through the states of Colorado, Utah, Arizona, and Nevada. The trail splits into two routes prior to entering Utah, and continues through the State of Utah within the planning area (Map 18).

The Armijo Route enters Utah north of Page, Arizona, in an area that is now part of Glen Canyon NRA, and crosses the Colorado River at the Crossing of the Fathers. The Armijo Route re-enters Arizona along Kanab Creek near Fredonia, Arizona. The route then re-enters Utah just west of Colorado City heading to the Virgin River where it continues southwest into Arizona.

The Northern Route of the Old Spanish Trail enters Utah near Moab, splits into two sections at Fremont Junction, then rejoins near the town of Circleville, just north of the planning area. From there the Northern Route continues southwest, running along the Sevier River, through the Markaguant Plateau and into the Parowan Valley where it heads southwest out of Utah to rejoin the Armijo Route south of St. George, Utah.

Wild and Scenic Rivers

Section 5 (d) (1) of the Wild and Scenic Rivers Act of 1968 requires that federal agencies make wild and scenic river considerations during planning. Congressional WSR designation is intended to protect a river’s free-flowing condition, water quality, and outstandingly remarkable values such as cultural, geology, wildlife, scenic, or recreational. During planning efforts, BLM reviews all potentially eligible streams within its jurisdiction, and makes decisions on eligibility, suitability and tentative classification. The three types of tentative classification are wild, scenic, and recreational. The tentative classification is based upon the degree of human development currently along an eligible river, and is used as a guide for future management activities. While no river segments within the decision area have been designated into the National Wild and Scenic Rivers System (NWSRS) by Congress, one river has been determined to be eligible in the Final Arizona Statewide Wild and Scenic Rivers Legislative Environmental Impact Statement, December 1994. This is the portion of the Paria River located within the Paria Canyon-Vermilion Cliffs Wilderness, including the 4.4-mile segment in Utah (Map 18). The Paria River is eligible for scenic and recreation outstandingly remarkable values.

Wilderness

The Wilderness Act of 1964 established a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. With the passage of FLPMA in 1976, Congress directed BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness. The FLPMA mandated wilderness review process was completed in Utah in October 1991.

The Paria Canyon-Vermilion Cliffs Wilderness was designated by Congress on August 28, 1984 as part of the Arizona Wilderness Act of 1984. The 111,640-acre Wilderness Area is in the southeast portion of the decision area at the Arizona and Utah state lines, with portions of the wilderness area located in each

state (Map 19). The 21,310 acres in Utah are managed by the Kanab Field Office. There are 90,330 acres in Arizona, managed by the Arizona Strip Field Office.

Wilderness Study Areas

The Wilderness Act of 1964 established a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for, and designated as, wilderness was managed by NPS and USFS. With the passage of FLPMA in 1976, Congress directed BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness. BLM's wilderness review process applied these three steps.

The first step of inventorying public lands to determine which lands had wilderness characteristics was done with extensive public involvement. Lands found to have wilderness characteristics were administratively designated as wilderness study areas (WSAs). The next step involved studying the WSAs to determine their suitability for wilderness designation. In Utah, that study included the preparation of a statewide wilderness EIS. The Utah Statewide Wilderness Study Report, published in October of 1991, reported the results of the study and made recommendations to Congress through the President about which should be designated wilderness, which is the third step. The final recommendation for wilderness designation was forwarded to Congress on June 22, 1992. Congress has not yet acted on that recommendation. This completed the FLPMA mandated wilderness review process.

From the recommendations in the Utah Statewide Wilderness Study Report, five WSAs were identified in the decision area. A discussion of the current wilderness characteristics and other resource values and uses found in each WSA can be found in the Wilderness Study Report (BLM 1991b). These five WSAs account for approximately 52,732 acres (9.5 percent) of the decision area (Map 19 and Table 27).

Table 27. Wilderness Study Areas

Proposal Name	Area (in acres)
North Fork Virgin River	1,040
Orderville Canyon	1,750
Parunuweap Canyon	30,800
Canaan Mountain	4,312*
Moquith Mountain	14,830
Total	52,732

Notes: * Includes acres only in decision area.
Source: BLM 1991a

The five WSAs, established under the authority of Section 603(c) of FLPMA, are being managed to preserve their wilderness values according to BLM's Interim Management Policy for Lands Under Wilderness Review, and will continue to be managed in that manner until Congress either designates them as wilderness or releases them for other uses.

Only Congress can designate the WSAs established under Section 603 of FLPMA as wilderness or release them for other uses. The current status of WSAs will not change in the Kanab RMP process; however, an understanding of the WSAs and the reasoning for their designation will give insight to current management procedures and issues that must be addressed during the RMP process. The following is a brief description of each WSA gathered from the Utah Statewide Wilderness Study Report.

North Fork Virgin River WSA (1,040 acres)

The North Fork Virgin River WSA is located in western Kane County along the eastern boundary of Zion National Park, approximately 45 miles northwest of Kanab. The area is roughly two miles long from north to south and one mile wide east to west (Map 19). The WSA consists entirely of public land administered by BLM and does not include any State, private, or split-estate inholdings. The WSA is bordered by State and private land except on the southwest where it adjoins Zion National Park.

The WSA is located in the Grand Staircase physiographic province, the southern end of the High Plateaus Section of the Colorado Plateau physiographic province. Elevations within the WSA range from approximately 5,400 feet on the canyon floor to 6,900 feet in the northern part of the WSA. The North Fork of the Virgin River flows westward through a canyon in the southern part of the WSA. The segment of the Virgin River within the WSA is 1.5 miles long. Most of the area is covered by mountain shrub vegetation consisting of pinyon, juniper, scrub oak, and other kinds of brush and bunch grasses. The remainder of the WSA is dominated by pinyon-juniper woodland with brush, forbs, and some ponderosa pine.

The WSA is essentially natural, and largely appears as an untouched bench cut by a deep canyon system with outstanding scenic values equal to those of Zion National Park. The canyon floor provides outstanding opportunities for solitude. Screening by vegetation and terrain is excellent, as the canyon floor is well below the upper bench lands. The canyon is sinuous, and thick vegetation covers parts of the canyon floor. The remaining portion of the WSA slopes gently southward and provides little topographic screening.

Orderville Canyon WSA (1,750 acres)

The Orderville Canyon WSA is in western Kane County along the eastern boundary of Zion National Park, about 40 miles northwest of Kanab (Map 19). The WSA consists entirely of public land administered by BLM. The WSA does not include any state, private, or split-estate inholdings. The WSA is bordered by private land on the east. On the north and south, the boundary generally excludes the old logging area and logging trails found at the edges of the upper canyon rims. The western boundary of the WSA is contiguous with the boundary of Zion National Park for about 1.5 miles.

The WSA is located in the Grand Staircase physiographic province at the southern end of the High Plateaus section of the Colorado Plateau physiographic province. The topography of the WSA is rugged with elevations ranging from about 5,100 feet on the canyon floor to 6,600 feet at the southwest edge of the WSA. The WSA contains a 2-mile segment of the upper Orderville Canyon (Orderville Gulch) and its several tributary canyons. Most of the area is covered by pinyon-juniper woodland with a sparse understory of brush, forbs, and grasses. The remainder of the WSA is dominated by mountain shrub.

The WSA is in a natural condition and is an untouched deep canyon system with outstanding scenic values reminiscent of neighboring Zion National Park. The opportunity to experience outstanding solitude exists in the deeply entrenched, 1,167-acre Orderville Canyon. Some of the side canyons are narrow and moderately vegetated with oak brush, ponderosa pine, pinyon, and juniper, providing both topographic and vegetative screening, resulting in outstanding opportunities for solitude. The upper bench area does not offer comparable opportunities.

Parunuweap Canyon WSA (30,800 acres)

The Parunuweap Canyon WSA is located in western Kane County, about 25 miles northwest of Kanab. The WSA is an irregularly shaped unit, roughly 10 miles at the maximum from north to south and 10

miles from east to west. The study area includes 30,800 acres of BLM-administered public land (Map 19). There are two inholdings (2 separate sections, totalling 1,253 acres) within the WSA boundary. No private or split-estate lands are within the WSA. The western boundary of the WSA is contiguous with Zion National Park for approximately 4.8 miles. The northern boundary is partly along fields, chainings, and topographic contours, and partly along the periphery of state and private lands. The southern boundary generally follows roads.

The WSA is characterized by the main, east-west oriented Parunuweap Canyon and other steep tributary canyons that are surrounded by buttes and mesas. The southwestern part of the WSA is a relatively flat area. Elevations range from about 4,800 feet in the bottom of the East Fork of the Virgin River Canyon to 6,600 feet on Harris Mountain at the southern end of the WSA. Vegetation is almost entirely pinyon-juniper woodland with a sparse understory of shrubs, and a few scattered stands of ponderosa pine.

Opportunities for solitude vary considerably throughout the WSA, however, the deeper, more irregular canyons and areas of eroded sandstone offer the best opportunities. Additionally, small areas with sand dunes and the more densely vegetated parts of the WSA also provide opportunities for seclusion and solitude. Opportunities for primitive and unconfined recreation opportunities occur in portions of the WSA and include activities such as backpacking, rock climbing, photography and sightseeing.

Canaan Mountain WSA (4,312 acres)

The Canaan Mountain WSA is located in southeastern Washington County and southwestern Kane County, about 70 miles east of St. George, Utah. Of the 47,170 acres of the WSA, approximately 42,858 acres are in Washington County, and 4,312 are in Kane County. The WSA is 10 miles from north to south, and 10 miles from east to west (Map 19). The WSA borders the BLM Cottonwood Point Wilderness in northwestern Arizona for about 5 miles along the Arizona State line, and adjoins Zion National Park on the WSA's northeast boundary for about 4 miles. The WSA consists of 47,170 acres of BLM-administered land. It includes several inholdings: five sections (3,249 acres) of State land and one section (640 acres) of split-estate land (Federal surface, state minerals). There is no private land in the WSA. The WSA is bordered by public (BLM), state, NPS, and private lands, and a road along part of the eastern boundary.

Canaan Mountain is the largest undisturbed plateau top or table land remaining in southwestern Utah. It possesses a quality of remoteness and naturalness not found elsewhere in the immediate region. The WSA is in the Vermilion Cliffs portion of the Grand Staircase, at the southern edge of the High Plateaus Section of the Colorado Plateau physiographic province. Canaan Mountain, a sheer plateau that rises 2,000 feet above surrounding land to an elevation of 7,340 feet, is the dominant feature of the WSA. Also found within the WSA are shallow lakes, springs, and four miles of perennial streams. Most of the surface of the WSA is rock and bare soil; vegetation only covers about 20 percent of the WSA. Ponderosa pine-mountain shrub is the dominant vegetative type, occupying about 75 percent of the vegetated portion of the WSA. Pinyon-juniper woodland covers approximately 19 percent, and sagebrush and riparian plants occupy the remainder of the vegetated portion of the study area.

Moquith Mountain WSA (14,830 acres)

The Moquith Mountain WSA is located in southwestern Kane County just north of the Arizona state line and about 4 miles west of Kanab. No split-estate lands (Federal surface, non-Federal mineral) are in the WSA. The Coral Pink Sand Dunes State Park borders most of the WSA on the west. The Kaibab Indian Reservation in Arizona borders the WSA for 5.25 miles on the south, and roads and non-Federal lands border the unit on the north and east.

Five distinct landforms comprise the WSA. In the central part are the Vermilion Cliffs, a “step” in the Grand Staircase in the southern end of the High Plateaus of the Utah Section of the Colorado Plateau physiographic province. The north side of the Vermilion Cliffs terrace includes a portion of the Coral Pink Sand Dunes and an escarpment above the dunes. The upper part of the WSA is a rocky table land covered with pinyon-juniper woodlands. Elevations range from 5,000 feet in the southeast at the foot of the cliffs to 7,000 feet on the top of Moquith Mountain in the southwest corner of the WSA.

In general the southern portion and parts of the eastern segment of the WSA provide the greatest opportunity for solitude. There are several short steep canyons in the cliffs on the western side of Moquith Mountain, as well as the summit of Moquith Mountain where isolation, sandstone outcroppings, and ponderosa pines provide screening and opportunities for solitude. Opportunities for primitive and unconfined recreation exist within the WSA and include hiking, backpacking, horseback riding, hunting, photography, and sightseeing. The WSA includes such features as perennial streams, hanging gardens, isolated stands of ponderosa pine and aspen, large alcoves, shifting sand dunes, and prehistoric sites.

Other Special Designations

Designation and management of scenic byways can occur at local, state, or national levels. Because of the number of visitors to the state and national parks and monuments, the popularity of these roadways has resulted in issues that public land management can address. The following is a description of the seven byways that are either entirely or partially included within the decision area (Map 18).

National Scenic Byways

The National Scenic Byways (NSB) Program was established under the Intermodal Surface Transportation Efficiency Act of 1991, and reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Under the program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. All-American Roads must exhibit multiple intrinsic qualities. For a highway to be considered for inclusion within the NSB Program, it must provide safe passage for passenger cars year-round, it must be designated a State Scenic Byway, and it must have a current corridor management plan in place. Installation of off-site outdoor advertising (billboards, etc.) is not allowed along byways. There is one All American Road (State Route 12); Garfield County has mobilized the effort to nominate Brian Head/Panguitch Lake Byway as a National Scenic Byway.

All American Road – Scenic Byway 12 (State Route 12)

This 180-mile scenic byway was recently awarded the prestigious designation of All-American Highway, the highest designation for any American road. State Route 12 is one of only 20 All-American Highways in the entire nation. From US Highway 89 south of Panguitch, State Route 12 winds east through some of the most varied scenery in Utah. Beginning in Red Canyon, State Route 12 winds through the northern portion of Bryce Canyon National Park and the Dixie National Forest, past Kodachrome Basin State Park, through GSENM and its Escalante Canyons, crossing over aspen-covered Boulder Mountain, and ends up in Torrey, just 5 miles west of Capitol Reef National Park. Throughout its length, State Route 12 intersects the decision area several times. In addition, the byway’s scenic viewshed includes portions of the decision area away from the constructed road.

Utah Scenic Byways

Similar to National Scenic Byways, Utah State Scenic Byways are paved highways that have been designated by official State declaration for their scenic, historic, recreational, cultural, archeological, or

natural qualities. The byways are paved roads that are generally safe, year-round, for passenger cars. Installation of off-site outdoor advertising (billboards, etc.) is not allowed along byways. There are four Utah Scenic Byways within the planning area.

Zion Park Byway (State Route 9)

This 54-mile byway extends east from I-15 to meet US Highway 89 at Mount Carmel Junction. Between these two points, the byway passes through the valley of the Virgin River and winds through Zion National Park. The byway enters the decision area at the eastern boundary of the park, where it drops down to Long Valley, and the intersection with US Highway 89, at Mt. Carmel Junction.

Markagunt High Plateau Byway (State Route 14 from Cedar City to US Highway 89)

This route is one of the most traveled areas in Southern Utah. Accessed off I-15 at Cedar City, this 40-mile byway ascends through a narrow canyon, passes Cedar Breaks National Monument, the Ashdown Gorge and the Zion Overlook. From the summit, the byway continues into Dixie National Forest to Cedar Mountain and several points of interest including Navajo Lake. The Markagunt Scenic Byway is known for its cultural, historical, natural, recreational and scenic attractions. While the byway never crosses the decision area, the area is within the byway's viewshed.

Brian Head/Panguitch Lake Byway (State Route 143)

This 55-mile byway extends from Parowan to Panguitch. Ascending to an elevation of 10,000 feet through Parowan Canyon, the route travels past Brian Head Resort and Cedar Breaks National Monument. From the Dixie National Forest the byway enters the decision area southwest of Panguitch. This byway is currently working toward National Scenic Byway designation.

Kanab/Mt. Carmel Byway (US Highway 89)

From Kanab, this byway follows US Highway 89 north through Three Lakes Canyon to its junction with Highway 12. The road ascends through the Grand Staircase's White, Pink, and Vermilion Cliffs, providing access to Coral Pink Sand Dunes State Park and scenic views of Zion National Park. On the northern stretches of the route, the road crosses a forested mountain valley. Red Canyon's pink cliffs and formations are visible at either side of the road. The 60-mile route ends in the Dixie National Forest's Red Canyon. US Highway 89 travels through much of the decision area. The byway's scenic viewshed includes portions of the decision area away from the constructed road.

Utah Scenic Backways

State Scenic Backways are roads that do not generally meet federal safety standards for safe year-round travel by passenger cars that have been designated by official State declaration for their scenic, historic, and recreational qualities. Backways often require four-wheel drive, and road conditions can vary due to such factors as season and weather. There are two Utah Scenic Backways within the decision area.

Johnson Canyon/Alton Amphitheater

This is a 32-mile scenic route in south-central Utah. It begins nine miles east of Kanab on US Highway 89 and heads north where it rejoins US Highway 89 at Glendale. An alternate route extends north to Alton, nine miles north of Glendale. The backway travels through much of the eastern part of the decision area, forming a portion of the boundary with GSENM.

Ponderosa/Coral Pink Sand Dunes

Ponderosa/Coral Pink Sand Dunes Scenic Backway provides a 12-mile scenic drive in southwest Utah and begins at the junction of Hancock Road with US Highway 89 about seven miles north of Kanab. The backway heads south through the decision area, connecting with the Yellowjacket Road and continuing south to Coral Pink Sand Dunes State Park.

BLM Back Country Byways

The Back Country Byway Program was developed by the BLM to complement the National Scenic Byway Program. These byways highlight the spectacular nature of the western landscapes. Back Country Byways vary from narrow, graded roads, passable only during a few months of the year, to two-lane paved highways providing year-round access. There are no BLM backcountry byways or backways in the decision area.

SOCIAL AND ECONOMIC FEATURES

The following sections will include discussions of socioeconomic conditions, Native American religious concerns, and hazardous materials and public safety. The discussion of socioeconomic conditions will include a short summary of the socioeconomic baseline report (BLM 2005c). Native American religious concerns will be discussed in detail and include information on tribal interests in the planning area, noting features not described in the cultural resources section, such as treaty-based subsistence uses, traditional use areas, and rights of access. Hazardous materials and public safety will be addressed by identifying hazardous materials or hazardous waste disposal facilities.

Socioeconomic Conditions

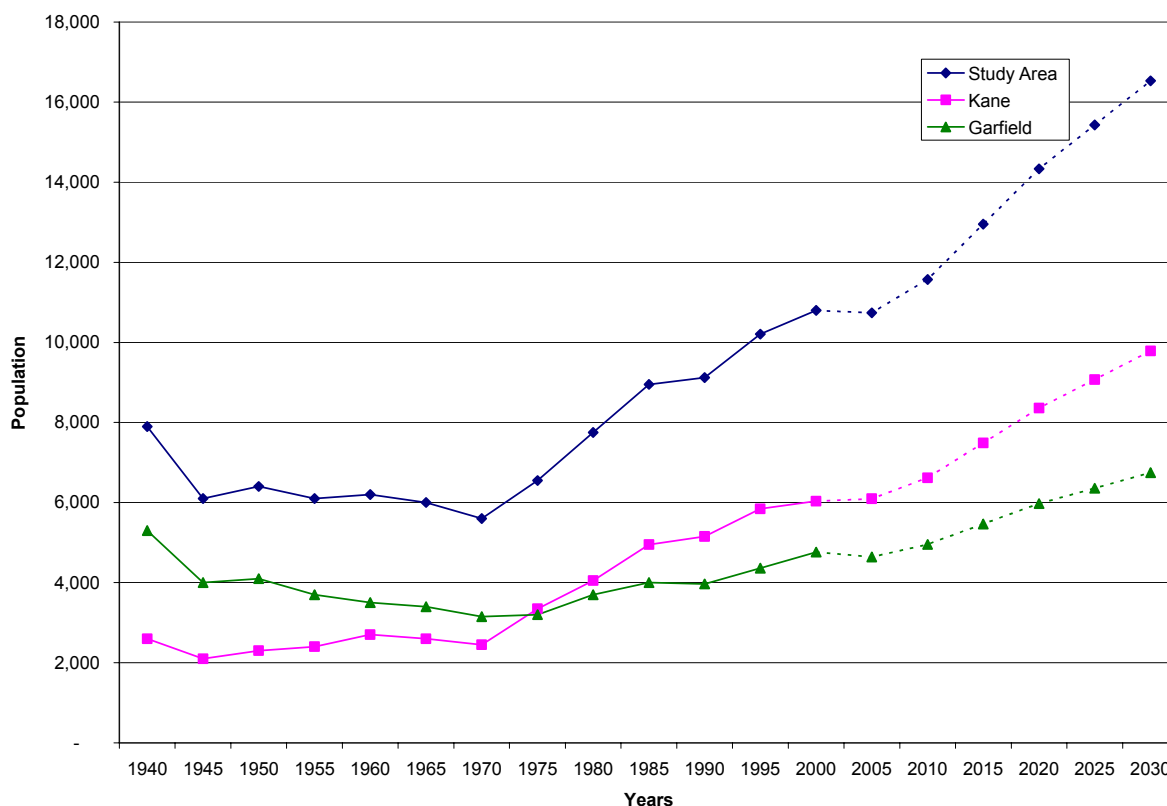
Much of the socioeconomic data available for this study is only available at the county level; therefore, the socioeconomic study area is defined as all of Garfield and Kane Counties. Where the data or information below is specifically for the planning area, this is so noted. Map 20 shows the boundaries of the socioeconomic study area and the planning area, as well as key features such as land ownership and local communities. More detail on socioeconomics, in addition to the information in this section, is provided in the Socioeconomic Baseline Report. Garfield and Kane Counties share prehistory, settlement patterns, history, culture, and economics. The first non-Indian historic communities in the socioeconomic study were Kanab and Panguitch, which were settled in the mid 1860s by Mormon pioneers, then abandoned, and resettled in the early 1870s. A few years after Panguitch was resettled, settlers began moving eastward, founding smaller settlements including Escalante in 1876, and Boulder, the most isolated town in Utah until the mid-1930s when the Escalante Road was constructed. Both counties in the socioeconomic study area have ties to the pioneers who settled the area and the influence of these pioneers remains strong today.

Historically, settlers utilized the vast rangeland to raise livestock. Garfield County also developed a large lumber industry, which remains important to the county today. In the 1920s and 1930s Kane County catered to film production and was called “Little Hollywood”. Around the same time, the establishment and development of national parks brought tourism to both counties. The service and tourism industries of Kane County, and to a lesser extent Garfield County, increased further with the Glen Canyon Dam project and the creation of Lake Powell. Tourism has become an increasingly important component of the local economy with greater access and greater national interest in the natural beauty of southern Utah.

The socioeconomic study area is very sparsely populated due to its isolation, aridity, and ruggedness. Garfield County averages less than one person per square mile, making it the least dense county in Utah. The entire study area is only slightly denser, and is considerably less dense than the state as a whole (27.2 persons per square mile).

Historical population data for each county and the socioeconomic study area from 1940 to 2005 combined with population projections from 2010 to 2030 are plotted in Figure 2. From 1970 to 2003, Kane County's population grew by 3,487 people—a 142 percent increase. Garfield County's population increased by 44 percent and the study area's population increased by 87 percent over the same period. Kane County's population grew faster than the state and the national growth rate, and Garfield County's growth rate was slower than the state's but outpaced the nation's rate (EPS 2005). Kane County's population overtook that of Garfield County, reflecting growth due to Kane County's proximity to the growth center of St. George, Utah. However, according to the latest population estimates from the Utah Governor's Office of Planning and Budget, Garfield County experienced a modest population decline (118 persons, or 2 percent) from 2000 to 2005, while Kane County's population growth flattened considerably. The state expects growth rates in both counties to continue at historic 1970 to 2000 rates, and to continue growing at those rates through the RMP planning period.

Kane County had a positive net migration rate of 12.1 percent in the 1980s and the same rate in the 1990s, reflecting more people moving into the county than leaving. Conversely, Garfield County has experienced negative net migration, reflecting more people moving out than coming in. However, Garfield County's percentage of people moving out relative to moving in decreased for the 1990 to 1999 time period to negative 0.3 percent compared to negative 5.8 percent from 1980 through 1989.

Figure 2. Socioeconomic Study Area Population Trends and Projections

Note: Dashed lines indicate population projections by the State of Utah for 2005 to 2030. Values for 2015 and 2025 are straight line interpolations of 2010, 2020, and 2030 projections. All other data points are from the source.

Source: Utah Governor's Office of Planning and Budget (2004a), State of Utah Demographic and Economic Analysis, Utah Population Estimates Committee.

Little land in the socioeconomic study area is privately owned. Most (88 percent) is administered by the Federal government. BLM manages the largest portion of Federal land in the socioeconomic study area (2.69 million acres), USFS manages 1.16 million acres, and NPS manages 0.89 million acres.

Economic Characteristics

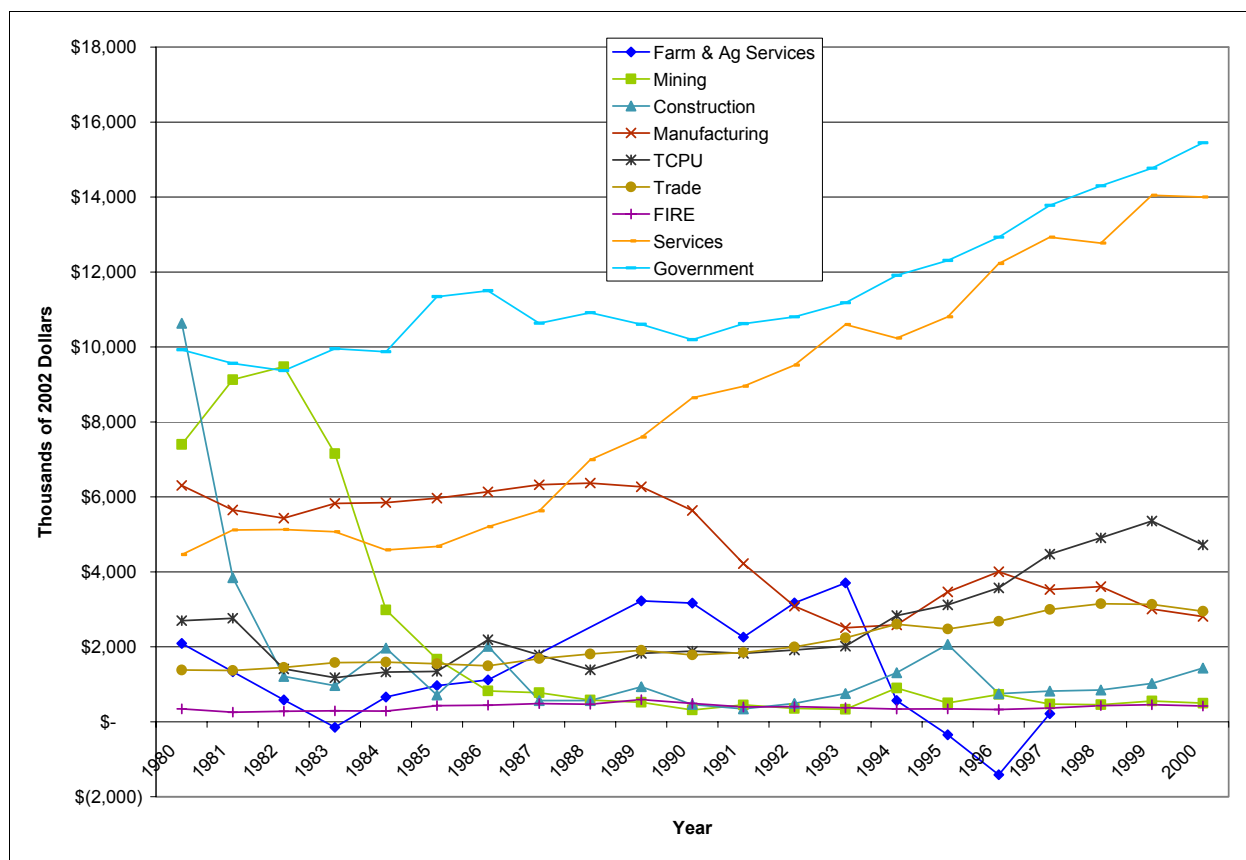
Levels of and changes in the labor force and unemployment provide information on the relative health of the local economy. Kane and Garfield Counties, as well as the state as a whole, showed increases in the labor force over the ten-year period from 1994 to 2003, but the socioeconomic study's annual average rate increase in the labor force (0.6 percent) was lower than the state's (1.7 percent). From 1990 to 2003, the unemployment rate for the study area was higher than that for the state and nation, and showed more volatility (fluctuation) throughout the 1990s. The average unemployment rate for the fourteen-year period was 7.9 percent for the study area, 4.2 percent for Utah, and 5.6 percent for the United States.

Total personal income was over \$230 million in 2002, an increase of over \$60 million (inflation adjusted) since 1992. This represents a total real personal income growth of 3.5 percent annually over ten years. Labor income has consistently accounted for the greatest percentage of personal income for the study

area; however, nonlabor income has grown substantially in importance over recent decades.¹ The percentage of total personal income derived from labor decreased considerably from 75 percent in 1970 to 59 percent in 2002. The annual percentage increase in labor income over this period was 2.9 percent, but investment income and transfer payments grew at faster annual rates, increasing by 5.1 percent and 5.3 percent respectively. These trends are similar to state and national trends.

The distribution of income by industry provides a good indication of the relative economic importance of various industries in the socioeconomic study area. Figure 3 and Figure 4 show trends in labor wages and salaries for nine industry groups from 1980 to 2000. In both counties, the services sector and the government sector have provided the greatest amounts of wages and salaries in the study area, and both show substantial upward trends. In Garfield County, both mining and construction earnings declined substantially in the early 1980s and have not gone back up. In Kane County, the trade industry has provided substantial and growing amounts of wages and salaries. Manufacturing declined in Garfield County in the early 1990s but increased substantially in Kane County in the late 1990s. Agricultural wages and salaries have been volatile in both counties, including some periods of negative earnings. Wages and salaries from other sectors have been relatively low, and essentially flat, over the two-decade period.

¹ *Personal income consists of labor and nonlabor income. Labor income is derived from wages, salaries, and self-employment income. Nonlabor income includes investment income and transfer payments. Investment income is gained from rents, dividends, and interest earnings. Transfer payments are largely derived from social security benefits, Medicare and Medicaid benefits, and other income support and assistance.*

Figure 3. Trends in Wages and Salaries by Industry for Garfield County, 1980 - 2000

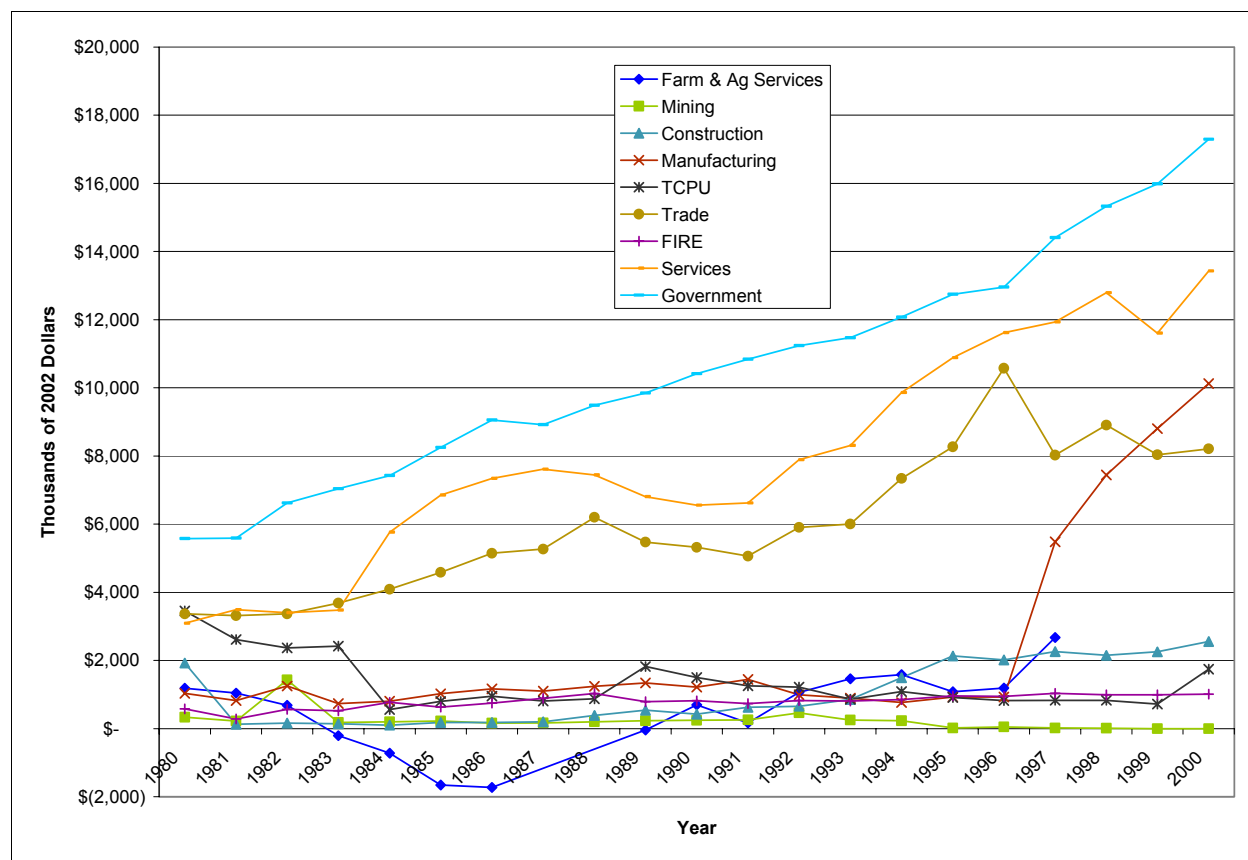
TCPU is Transportation, Communication, and Public Utility employment.

FIRE is Finance, Insurance, and Real Estate employment.

Farm & Ag Services data was not available for 1987, 1988, 1998-2000. Data gaps are due to data disclosure restrictions of the Bureau of Economic Analysis.

Non-agricultural industries source: State of Utah Governor's Office of Planning and Budget 2004b.

Farm & Ag Services source: EPS (2005), using U.S. Department of Commerce Bureau of Economic Analysis data (Regional Economic Information System 2002 CD Table CA05).

Figure 4. Trends in Wages and Salaries by Industry for Kane County, 1980 - 2000

TCPU is Transportation, Communication, and Public Utility employment.

FIRE is Finance, Insurance, and Real Estate employment.

Farm & Ag Services data was not available for 1987, 1988, 1998-2000. Data gaps are due to data disclosure restrictions of the Bureau of Economic Analysis.

Non-agricultural industries source: State of Utah Governor's Office of Planning and Budget.

Farm & Ag Services source: EPS (2005), using U.S. Department of Commerce Bureau of Economic Analysis data (Regional Economic Information System 2002 CD Table CA05).

Demographic Characteristics

The ethnic makeup of the socioeconomic study area is predominantly white (95.5 percent in the 2000 census), as it is for the state (89.2 percent). Garfield and Kane Counties are very similar in ethnic makeup, and there are only slight differences in ethnic composition between the study area and the state. The study area has a higher percentage of whites and a smaller percentage of Hispanics or Latinos than the state. The percentages of other ethnic groups in the study area are small and very similar to Utah as a whole.

The median household income in the 2000 census was \$32,400 in Garfield County and \$31,500 in Kane County, compared to \$42,100 for the state and \$38,700 for the nation. However, median household income increased more rapidly over the 1990s for the socioeconomic study area (105 percent) compared to the state (96 percent) and nation (76 percent).

Both counties had a higher rate of individuals below the poverty level than did the state and the nation in the 1990 census. However, in the 2000 census, poverty rates for Garfield County (8.1 percent) and Kane County (7.9 percent) were below those of the state (9.4 percent) and the nation (12.4 percent).

The median age for individuals in Garfield County in the 2000 census was 33.8 years, which is an increase from 31.3 years in the 1990 census. Kane County's median age in 2000 was 39.1 years—a substantial increase from 30.8 years in 1990. Both counties have a higher median age than Utah (27.1 in 2000). Kane County's median age is also higher than that of the nation (35.3 in 2000). The high figure and sharp increase in median age for Kane County can be explained by the spillover of retirees migrating to the St. George area.

Resource Uses and Values

The forestry and woodland products section of this chapter details these uses of BLM lands. There are no commercial saw timber operations within the decision area. There is limited commercial and non-commercial harvesting of fuelwood. The Kanab Field Office sold an average of 560 cords of wood in 2001 through 2004. Christmas tree and post cutting also occur.

Calculation of the value of livestock grazing within the decision area is based on the five-year average of authorized AUMs since management has been tracked (2000 through 2004; see the livestock grazing section of this chapter), and assumes all authorized AUMs were in fact utilized. Authorized AUMs in this period averaged 7,239 for cattle, and 153 for sheep and goats. The average value of production per AUM in 2003 dollars for the State of Utah is \$41.22 for cattle AUMs, and \$22.93 for sheep AUMs, based on the methodology described in the Socioeconomic Baseline Report. Applying these values to the authorized AUM figures shows that the average value of production for livestock grazing within the decision area in recent years is \$298,400 for cattle, and \$3,500 for sheep and goats, or \$301,900 total. Combined with information on livestock production across the entire socioeconomic study area, these data show that 2.6 percent of the most recent 5-year annual average of cash receipts for livestock and livestock products (\$11,502,000) can be attributed to BLM lands grazing. However, this small percentage figure may not reflect the full significance of grazing on BLM lands. For instance, this grazing could be critical to certain operators at certain times of the year when other forage or feed is unavailable or expensive.

The recreation section of this chapter provides information on recreational use within the decision area. BLM's RMIS database of recreational activity data indicates that during 2001 through 2004, the activities with the most participants were (in descending order) OHV use, big game hunting, hiking/walking/running, backpacking, and viewing. The activities with the highest visitor days (12 hours of activity) were (in descending order) backpacking, big game hunting, OHV use, camping, and hiking/walking/running. The RMIS data shows Federal fiscal year 2002 as the peak year for participant days and near-peak year for participants; otherwise, the data show a steady increase in participants and visitor days from 2001 through 2004.

Other recreational visitation numbers for the socioeconomic study area have declined in the past several years, mirroring trends for the state and nation. Figures from the Utah Division of Travel Development (2005) indicate visitation to most state and national parks in the study area peaked during 1999 through 2000, and in most cases has declined since. The State Division of Parks and Recreation (2003) attributes these recent dips in visitation to slumping global economy and decreased tourist travel following the September 11th, 2001 terrorist attacks. The state also notes that despite these visitation declines, recreation and tourism-related sectors have substantial potential for growth. Long-term increases in recreation visits are likely as a result of projected state and regional population growth, interest in the world-class recreational resources of southwestern Utah, and an aging population that will demand increased opportunities for leisure and recreation.

The Utah Division of Travel Development (2005) estimates that there were 1,916 travel and tourism-related jobs in the socioeconomic study area in 2003. According to the Division, 44 percent of total employment in Garfield County occurred in tourism-related jobs, and 37 percent in Kane County. The

Division estimates travelers spent a total of \$82.9 million in the study area in 2003, resulting in \$1.7 million in tax revenues to local governments.

Lands and realty actions and policies, detailed in the corresponding section of this chapter, have important socioeconomic effects. Land disposals, ROWs, leases, permits, and easements allow for economic activity and community expansion and may further the economic development of communities within the planning area or serve other important social purposes. Withdrawals and land acquisitions may protect important resources of economic or social significance to the public.

Lands and realty actions also have important implications to public finance. Disposal of BLM lands to private ownership may reduce Payments In Lieu of Taxes (PILT) by the Federal government to local government, but also result in payments of property taxes to local government by the new private property owner(s). Acquisition of private land by BLM would reduce property taxes paid to local government but would typically increase PILT payments.

Mineral and energy development on lands and Federal mineral estate managed by the Kanab Field Office currently includes 23 authorized oil and gas leases on 65,500 acres. Drilling activity has steadily declined since the 1960s with only one well drilled on Federal property in the 1990s. There is some renewed interest in oil and gas in the area, but there are presently no applications for permits to drill. Most of the 30 past leases for coal development were closed out in the 1980s and 1990s. Currently there are no authorized coal leases although, one request has been filed. There are 11 active mining claims, one active notice, and one active plan of operations for locatable minerals. For mineral materials (e.g., sand, gravel), 10 free use permits are active, and 75 to 100 over-the-counter permits are issued each year. The minerals and energy section of this chapter provides additional information on these uses, and the Socioeconomic Baseline Report provides information on economic values.

Lands in the decision area contribute to the livelihoods of area residents through subsistence uses as well as through market-based economic production and income generation. Public lands provide products of value to households at no or low cost (permit fees). These products include fuelwood, Christmas trees, wood posts, livestock raised for household consumption, pine nuts, and mineral materials such as sand and gravel. Additional products with subsistence value may include fish, game, plants, berries, seeds, and more. Products of BLM lands are of special value to low income households. In addition, use of these products is often part of family traditions and sustains local culture.

Public Finance

Lands and Federal mineral estate managed by the Field Office affect local, state, and Federal government budgets to the extent they produce mineral royalties, taxes, PILT, fees, and other revenues, or result in government expenditures for management, law enforcement, and other activities. This topic is discussed in detail in the Socioeconomic Baseline Report and summarized below.

The Federal Government's Minerals Management Service collects royalties and rents from leases of Federal lands for production of coal, oil, gas, and other minerals. Minerals Management Service also collects bonuses on certain leases. The Federal mineral estate in the socioeconomic study area produces low mineral revenue compared to other parts of Utah. In state fiscal year (July 1 – June 30) 2004, Garfield County generated \$604,000 in oil and gas royalties, rents and bonuses, and Kane County generated \$194,800, compared to \$134.4 million for the entire state.

The Kanab Field Office collects fees and other revenue for a variety of other uses of BLM lands. These revenue sources include ROW rents, recreation fees, grazing fees, various permit fees, and more. Revenues from sales of land and vegetative and mineral materials, along with ROW rents, mostly go to

the Federal treasury, while recreation fees are retained by the Kanab Field Office. Section 3 grazing permit fees associated with Federal AUMs generate revenue for the U.S. Treasury, of which 12.5% is returned to the local Grazing Board via the state in which the AUMs are located. This money is then disbursed to local ranchers through the local Grazing Board, using a 40/60 matching-funds formula, for use in range improvements and maintenance projects (See Taylor Grazing Act section 10).

Fifty percent of Federal revenues from oil and gas royalties, rents and bonuses are returned to the state of origin. In Utah, these revenues are channeled through the Utah Department of Community and Economic Development to various state funds and other state and local agencies. In state fiscal year 2004, Utah received \$399,400 generated by the Federal mineral estate in Garfield and Kane Counties.

The State of Utah collects several taxes and fees that derive from natural resources on both private lands and public lands. These include the mining severance tax, oil and gas severance tax, oil and gas conservation fee, and income taxes mineral production income. Due to the relatively low level of mineral and energy development in the socioeconomic study area, the state earns minimal revenue from its taxes and fees.

Much of the state's Federal oil and gas royalty, rent and bonus revenue is disbursed to local government. The primary means for the disbursements are through the Utah Department of Transportation (UDOT), the Permanent Community Impact Fund, and the Special Service Districts Fund. Only the UDOT funds are directly proportional to the Federal mineral revenue produced by each county. In state fiscal year 2004, Garfield County received \$148,900 through UDOT, and Kane County received \$53. (Kane County generated mostly bonus revenue, which unlike royalty and rental revenue is deposited into state discretionary funds rather than the "pass-through" UDOT fund.)

Another source of local funds based on natural resources is taxes on natural resource properties. While local governments assess real and personal property, the State of Utah assesses the value of natural resource property, specifically oil and gas wells, metal mines, coal mines, sand and gravel mines, and non-metal mines. County treasurers then set and collect taxes from these properties. On public lands, the values and taxes are based on the higher of a) the value of equipment on the site, or b) discounted cash flow from production if the well or mine is producing. These properties may be located on either private or public land. Table 28 shows the amounts collected by the socioeconomic study counties in 2003. These figures reflect all lands in the two counties; a breakdown for BLM lands is not available. The total local taxes charged against natural resource properties in the study area were about \$154,400 in 2003, which represents 1.5 percent of the \$9,949,000 in total local property taxes collected in the socioeconomic study area.

Table 28. Local Property Taxes Charged Against Natural Resource Properties, 2003

County	Oil and Gas Extraction	Metal Mines	Coal Mines	Sand and Gravel	Non-Metal Mines	Total Natural Resource
Garfield County	\$67,885	\$53,556	\$0	\$8,582	\$0	\$130,023
Kane County	\$0	\$0	\$0	\$19,670	\$4,673	\$24,342
Study Area	\$67,885	\$53,556	\$0	\$28,252	\$4,673	\$154,365

Source: Utah State Tax Commission (2004), 2003 Annual Statistical Report, Local and Centrally Assessed Property.

A source of local government revenue directly attributable to the public lands in each of the counties is PILT. PILT payments are made by the Federal Government to compensate counties for lost property tax

revenue attributed to Federal lands. PILT payments to Garfield and Kane Counties in recent years are shown in Table 29. In fiscal year 2004, PILT payments for all Federal lands in the two counties totaled nearly \$942,000. These payments cannot be readily attributed to BLM versus other Federal lands.

Table 29. Payments in Lieu of Taxes, 1999-2004

County	1999	2000	2001	2002	2003	2004
Garfield County	\$209,702	\$224,873	\$357,580	\$375,382	\$416,983	\$428,693
Kane County	\$274,860	\$342,723	\$420,052	\$432,522	\$499,106	\$513,297
Study Area	\$484,562	\$567,596	\$777,632	\$807,904	\$916,089	\$941,990

Source: BLM (2004b), Payments in Lieu of Taxes website, Total Payments and Total Acres by State/County.

Federal government expenditures related to Federal lands benefit the local economy because Federal salaries to land management staff who reside in the socioeconomic study area and Federal contracts to businesses located in or with employees residing in the study area represent inflows of money to the study area. During the Federal fiscal years 2001 through 2004, total Kanab Field Office salaries averaged \$803,500 per year. In the same period, the Kanab Field Office paid an average of \$179,600 per year in contracts to local firms.

Management of BLM-administered land may affect state and local budgets. For instance, recreation on public lands requires some support from local government for road maintenance, law enforcement, and search and rescue. It is difficult to separate expenditures related to BLM-administered land from expenditures related to other land. Additional types of state and local expenditures that may be affected by public land use include emergency medical services, wildlife management, fire management, solid waste collection and disposal, and public utilities.

Environmental Justice

EO 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires identifying and addressing disproportionately high and adverse human health and environmental effects of Federal programs, policies and activities on minority and low-income populations.

Relevant census data for the two counties within the socioeconomic study were collected to determine whether populations residing within the study area constitute an “environmental justice population” by meeting either of the following criteria:

- At least one-half of the population is of minority or low-income status.
- The percentage of population of minority or low-income status is at least 10 percentage points higher than for the entire State of Utah.

As shown by the figures in the demographic characteristics section above, neither county has populations that meet either criterion. Thus, at the county level, no populations within the study area meet the criteria to be subject to environmental justice considerations. It is possible that some highly localized minority or low-income populations exist.

Values and Attitudes

Today, even though fewer families earn their livelihood solely from livestock production or natural resources such as timber and minerals than in previous times, the descendants of the area's settlers still have strong connections to the land. Access to public land and resources, whether for earning a living or for recreating, is very important to the local people. These connections to the land are as obvious as the cultural importance of livestock grazing and as subtle and unknown (to non-residents) as the tradition of "Eastering," in which local families at Easter time roll eggs down sand hills, the winner declared by having the last egg to break.

Economic and social connections to public land use were often mentioned in the public scoping process for the RMP which occurred in early 2005. Comments were often related to OHV use and route designations, livestock grazing, recreation, and general access to public lands. Many commentors were concerned that increased restrictions would lead to a change in their traditional use of public lands surrounding their communities. Many commentors expressed a desire for maintaining or expanding the local economies by allowing the most economically beneficial resource uses to occur. Some of the resource uses mentioned to have economic benefits included mineral development, grazing, tourism, and OHV use.

Some respondents identified public land use as a way of life for local communities. In particular, many of these individuals felt that it was very important that public lands grazing be recognized as a historically important use of land that is worth preserving. There were comments that differed from this point of view in terms of the sustainability of public lands grazing, but no individuals or groups denied the historical importance of grazing.

Some individuals indicated that management decision processes were not accounting for costs associated with some resource uses. Among the costs mentioned were environmental remediation for mineral development sites, range management for livestock grazing, and management for OHV use. In addition to management costs, many commentors raised concerns over the environmental impacts of many activities on public lands. These concerns were voiced by individuals residing within and beyond the socioeconomic study area. Given the statewide and national significance of resources in the decision area, many individuals outside the socioeconomic study area have strong values and attitudes regarding management of BLM-administered lands. Other common concerns indicated perceived conflicts between motorized and nonmotorized uses, between resource development and primitive recreational experiences, and between other uses of public lands.

Native American Religious Concerns

No specific Native American religious concerns have been identified in the decision area. This includes Traditional Cultural Properties, treaty-based subsistence use areas, traditional use areas, and rights of access. A recent ethnography was conducted for GSENM of the Paiute Tribe (Stoffle et al. 2001). While this ethnography did not include lands in the planning area, one of its key findings is that water plays an important part in the Paiute's life and beliefs. Springs and rivers provided the water and other resources the Paiute's were dependent upon for survival. Any source of water is a potential Native American religious concern, and further consultation with the Native American tribes will be required to identify specific sites or areas.

Hazardous Materials and Public Safety

There are no known occurrences of hazardous materials or approved hazardous waste disposal facilities within the decision area. Hazardous materials are defined as any material that, because of its quantity,

concentration, or physical or chemical characteristics, may pose a real hazard to human health or the environment. Hazardous materials include flammable or combustible material, toxic material, corrosive material, oxidizers, aerosols, and compressed gases.

Management of hazardous materials, substances, and waste (including storage, transportation, and spills) will be conducted in compliance with 29 CFR 1910, 49 CFR 100-185, 40 CFR 100-400, Comprehensive Environmental Response Compensation and Liability Act, Resource Conservation and Recovery Act, Superfund Amendment Reauthorization Act, Toxic Substances Control Act, Clean Water Act, and other Federal and state regulations and policies regarding hazardous materials management.

CHAPTER 3– CURRENT MANAGEMENT DIRECTION

This chapter describes current management direction for public lands and resources within the decision area. The decision area is managed according to five separate land use plans, subsequent amendments to those plans, and other temporary decisions that address land-use-plan level decisions. Applicable documents are noted in Table 30. Since these land use plans were finalized, there have been several changes in administrative boundaries and realignment of BLM managerial units. Map 21 shows the planning units of the five existing land use plans in relation to the existing decision area. Management actions noted in this chapter are limited to those that apply to the current decision area (Map 1) and not necessarily all the decisions from the old land use plans. Decisions discussed in this section have been adjusted to reflect this change.

Table 30. Relevant Planning Documents

Document Title	Year	Description
Escalante MFP	1981	Management framework plan for the old Escalante Resource Area in Kane and Garfield Counties.
Paria MFP	1981	Management framework plan for the Paria Planning Unit of the old Kanab Resource Area in Kane and Garfield Counties.
Vermilion MFP	1981	Management framework plan for the Vermilion Planning Unit of the old Kanab Resource Area in Garfield and Washington Counties.
Zion MFP	1981	Management framework plan for the Zion Planning Unit of the old Kanab Resource Area in Garfield and Washington Counties.
Cedar-Beaver-Garfield-Antimony RMP	1986	RMP including decisions for the Garfield and Antimony Planning Units of the old Kanab Resource Area in Garfield and Kane Counties.
Vermilion MFP Amendment	1986	Amendment designating and prescribing management for the Water Canyon/South Fork Indian Canyon ACEC and the No Mans Mesa Research Natural Area (RNA).
Paria, Vermilion, and Zion MFPs and Garfield Planning Unit of the Cedar-Beaver-Garfield-Antimony RMP Amendment	1998	Requires any form of land tenure adjustment (with the exception of land sales) to meet one or more of five criteria and requires site-specific NEPA on each action.
Vermilion MFP Amendment	2000	Adjusts management for the Coral Pink Sand Dunes/Moquith Mountain area.
Temporary Emergency Off-Road Vehicle Limitations	2000	Temporarily restricts motorized vehicle travel within the Parunuweap Canyon, Orderville Canyon, and North Fork Virgin River WSAs. See Federal Register Vol. 65 No. 168 pg. 52437.
Utah Land Use Plan Amendment for Fire and Fuels Management	2005	Amended the fire and fuels management portions of all existing land use plans in the decision area.
Notice of Travel Restriction and Seasonal Closure to OHVs	2005	Off-highway vehicle travel restriction and seasonal closure to motorized use in the Hog Canyon and Trail Canyon Areas. See Federal Register Vol. 70 No. 153 pg. 46541.

The chapter is organized into three sections: Resources, Resource Uses, and Special Designations. Decisions noted in the Resources section address management of those natural, biological, and/or cultural components. Decisions noted in the Resource Uses section involve management of activities that utilize the natural, biological, and/or cultural components, such as livestock grazing, recreation, or mineral development. Decisions noted in the Special Designations section include the designation and management of BLM administrative management areas (e.g. Areas of Critical Environmental Concern, Backcountry Byways, and WSAs) as well as management of Congressional designations (e.g. National Historic Trails). Decisions are organized by resource or resource use. The land use plan from which the decisions are derived is noted in superscript text associated with each decision or component of a decision. The following list notes the superscript numbers associated with each land use plan (including all amendments associated with each plan):

1. Escalante MFP
2. Paria MFP
3. Vermilion MFP
4. Zion MFP
5. Cedar-Beaver-Garfield-Antimony RMP
6. Temporary Emergency Off-Road Vehicle Limitations
7. Notice of Travel Restriction and Seasonal Closure to OHVs

Not all land use plans include decisions for every resource or use. In the absence of decisions in land use plans, BLM policy is applied to the extent possible, however, BLM policy is not included in this chapter. Collectively, this chapter represents current management of BLM-administered lands and resources and will form the basis of the No Action Alternative in the Draft EIS. This management direction would continue into the future without additional RMP/EIS changes.

RESOURCES

Air Quality Management

Goals/Objectives

- Assure compliance with the Clean Air Act.⁵

Decisions

- Maintain compliance with the Clean Air Act through the application of the NEPA process on a case-by-case basis.⁵

Soil Resources Management

Goals/Objectives

- Reduce or minimize water and wind erosion by improved management and land treatments to stabilize soils, maintain soil productivity, and stabilize eroded stream channels.^{1, 2, 3, 4}

Decisions

- Monitor the management systems to determine if progress toward meeting watershed objectives is being achieved. Make appropriate adjustments where and when necessary to assure progress toward meeting the watershed objectives.¹

- Reduce soil loss on identified areas by performing land treatments, such as removing sagebrush, pinyon and juniper trees by mechanical means followed by reseeding with grasses or forbs and/or removing sagebrush by spraying or burning, and pinyon and juniper trees by cutting.^{1,3,4}
- Use contour furrowing following eradication of sagebrush to retain water and sediment.⁴
- Treatments would be conditioned on a more detailed feasibility determination for each proposed treatment area.¹
- Seed by broadcast methods or by rangeland drill.^{3,4}
- Prohibit livestock grazing for at least two full growing years after reseeding.⁴
- Consider relative values of potential treatment versus VRM when there is an indication treatment will impact VRM Class II areas. If impacts cannot be mitigated decisions will be based on the relative merits and values.¹
- Implement the following management on identified areas of highly erodible, frail soils to minimize soil loss and salinity of water runoff:³
 - Limit off-road vehicle use to existing roads and trails on areas identified as most critical and susceptible to off-road vehicle damage.³
 - For locatable and saleable mineral operations located on frail watershed, incorporate salinity and erosion control stipulations into the mining plans.³
 - Do not allow any mechanical land treatments in these areas with frail watershed.³
 - Incorporate erosion control measures into any developments for livestock, recreation, wildlife and realty purposes which are done on frail watershed areas.³
 - Continue to control wildfires on frail watersheds.³
 - Eliminate proposed water trough on frail watershed in the Vermilion Allotment.³
- Allow frail soils to be classified as suitable for livestock grazing and allow grazing to the carrying capacities proposed. After five years, once intensive management is implemented, resurvey the erosion condition on these areas. If the Soil Surface Factors are still greater than 60, classify as unsuitable for livestock grazing and allow no AUMs for these areas until erosion is below critical. Suitability will not change until an evaluation is made after 15 years. This is consistent with the criteria by which certain frail watershed areas were determined to be suitable. For other resource activities:⁴
 - Prohibit land treatments, wood harvesting, and burning on frail soils identified as unsuitable for clearing and rehabilitation by a detailed soil survey.⁴
 - Allow pipelines, powerlines, roads and industrial sites associated with proposed ROWs to be constructed on these areas with erosion control stipulations incorporated in the plans. Allow for disposal of these areas for agricultural or municipal purposes.⁴
 - Allow surface mining and saleable mineral excavation to occur with erosion control stipulations and rehabilitation made a part of the mining plans.⁴
- Increase watershed cover and reduce soil loss by implementing the following intensive grazing management on areas of heavily utilized vegetation:⁴
 - Eliminate livestock grazing on treated areas for an initial period of two full growing seasons (April 1 through July 15).⁴
 - Following the initial rest noted above, permit only moderate utilization of the key species in these areas. Establish moderate utilization at 50 percent for all seedings.⁴
- A let wildfire burn policy on areas recommended to use burning as a land treatment will not be accepted on sandy soils that are highly susceptible to wind erosion.⁴

Water and Watershed Resources Management

Goals/Objectives

- Reduce or minimize water and wind erosion by improved management and land treatments to reduce salinity and sediment yield and stabilize eroded stream channels.^{1,2}

- Maintain and improve water quality in the planning unit.³
- Meet State and Federal standards for water quality and onsite and offsite uses and users when and where established.³
- Reduce and control flood and sediment damage, avoiding watershed deterioration both on and off public lands in the planning unit.^{4, 5}
- Improve watershed conditions on areas identified with significant erosion condition problems and on other sensitive watershed areas, such as riparian areas.⁵
- Assure an adequate supply of water for existing and proposed BLM management activities. Ensure production of quality water as required by State and Federal legislative acts and regulations for onsite and downstream users. On water-related issues, coordinate with proper local, State, and Federal authorities.⁵

Decisions

- Monitor the management systems to determine if progress toward meeting watershed objectives is being achieved. Make appropriate adjustments where and when necessary to assure progress toward meeting the watershed objectives.¹
- Require protective stipulations on any actions taken under land and minerals decisions to protect riparian areas. Construct water lanes as needed.²
- Stabilize streambanks and reduce sediment yield along identified stream channels by performing intensive water control treatments including gully headcut stabilization and check dams. Specific locations of necessary structures or treatments along these stream channel reaches will be determined following preparation of an activity plan for each area.^{3, 4}
 - Omit all portions of stream channels located within the proposed strip mining areas. If these areas are found to be unsuitable according to the Coal Unsuitability criteria, perform the channel treatments as originally recommended.⁴
 - Incorporate erosion control stipulations into ROW applications to ensure that erosion control objectives are met where road construction or upgrading activities take place at crossings of channels recommended for treatment.⁴
- Provide for the improvement and protection of water quality of the culinary water supply for Fredonia, Arizona, by eliminating livestock grazing and off-road vehicle use above the legally approved water collection points for the city in Cottonwood and South Fork Canyons. Accomplish this by fencing across the drainages above and below the collection points. Provide for access in the canyon for maintenance vehicles to maintain the water pipelines.³
- Allow surface mining instead of grazing management on the identified areas under conflict. Incorporate erosion control stipulations into the mining plan as per SMCRA regulations.⁴
- Allow material sales of sand and gravel or burnt shale aggregate on the areas in conflict. Incorporate erosion control and rehabilitation stipulations into the mining plans.⁴
- Reduce flood runoff from public land on 1,140 acres in the Muddy Creek drainage by performing land treatments, including pinyon juniper eradication and contour trenching. The exact number and type of treatments cannot be stated until a complete activity plan is completed for the area. Pinyon-juniper removal should be done by chaining, followed by re-seeding with grasses and forbs. Livestock should be excluded following treatment until establishment of seedings, at least two growing seasons.⁴
- Prepare Watershed Management Plans for the Garfield planning unit. The management plan will provide for assessments of current information regarding significant erosion areas, groundwater, surface water, floodplains, salinity, municipal watersheds, the identification of data gaps, field inventories to verify existing data or fill in data gaps, and a ranking or prioritization of problem areas for activity planning purposes.⁵
- Cooperate and coordinate with local and State health departments, and the Utah Water Pollution Control Committee in maintaining water quality in the Garfield planning unit.⁵

Vegetation Management

Goals/Objectives

Vegetation management goals or objectives were not specifically identified in the existing land use plans.

Decisions

- Do not treat areas containing ponderosa pine trees unless these trees can be protected.²
- In non-pinyon-juniper vegetation types, brush beating, burning, spraying, and plowing are all viable alternatives for sagebrush and shrub eradication and will be the usual treatments used on all shrub areas.²
- General Treatments Stipulations:
 - Prepare a modified fire suppression plan for all areas where private, State, and USFS properties, and exclusion areas mentioned above, will not be jeopardized.²
 - Use prescribed burning in lieu of mechanical treatment wherever vegetation will carry a fire and is deemed suitable.²
 - All treatments should conform to VRM standards.²
 - Evaluate each treatment site for soil suitability and stability prior to manipulation.²
 - Do not use supplemental seed where an ample native seed source of grasses, forbs, and desirable browse is present.²
 - Native species of grasses, forbs, and browse of ample amounts should be used in the seed mixture whenever possible to avoid monotype vegetation and to ensure good forage species for wildlife as well as for livestock.²
 - Mechanical treatments should leave the residue in place, without windrowing or burning the litter. This will help reduce erosion and provide a good seedbed.²
 - Obtain T&E species and cultural resource clearances prior to vegetation manipulation.²
 - Design mechanical treatments to provide an “edge” effect for wildlife benefits. This is done by “feathering” the edges, leaving tree islands and peninsulas and treating in strips, preferably on the contour.²
 - Refrain from large solid blocks of treated area when possible.²
 - Livestock will be excluded from all treatment areas until seedlings are established, a minimum of two growing seasons.²
 - All the above stipulations should be considered and incorporated in an Environmental Assessment (EA) for each treatment area.²
- Protect the relict characteristics and values on Diana’s Throne (90 acres) by segregating it from mineral entry and land disposals.²
- Burn, chain, brush beat, spray, and furrow or trench identified areas of pinyon juniper and sagebrush.²

Special Status Species Management

Special Status Species management in the Paria MFP (superscript number 2) was addressed as a number of habitat improvement projects that are integrated with Fish and Wildlife Habitat Management above.

Goals/Objectives

- Maintain important habitat for one Federally endangered species (bald eagle) by maintaining ponderosa pine for winter roosting habitat.^{3, 4}

- Maintain important habitat for two upland game species (turkey and band-tailed Fagan pigeon), and several species of raptors by maintaining ponderosa pine for winter roosting habitat and summer nesting habitat.⁴
- Enhance raptor (eagles, falcons, hawks, and owls) habitat within the Escalante planning unit.¹
- Provide a safe and enjoyable recreation experience for all visitors to the Coral Pink Sand Dunes/Moquith Mountain area while managing and protecting natural resources.³

Decisions

- Protect bald eagle feeding and concentration areas, peregrine falcon use areas, and other raptor nest sights on public lands from undue intrusions of all kinds (e.g., off-road vehicle use, mineral or sale operations, and land treatments). A minimum of 0.25-mile buffer zone will be required around bald eagle concentration areas, peregrine falcon use areas, and other raptor nest sites to assure proper protection.¹
- BLM would continue to implement applicable portions of the Welsh's Milkweed Recovery Plan, updated by new scientific information.³
- Approximately 790 acres of designated critical milkweed habitat on BLM administered portions of the sand dunes are closed to OHV use.³
- The five conservation actions identified in the Conservation Agreement and Strategy for the Coral Pink Sand Dunes Tiger Beetle would be fully implemented. This would result in the permanent establishment of a 370-acre tiger beetle conservation area on BLM administered lands in the northeast corner of the sand dunes.³
- Maintain ponderosa pine as winter roosting sites for bald eagles, and nesting sites for other raptors and band-tailed pigeons by not allowing any cutting of live or dead standing trees.^{3, 4} Underground coal mining would be allowed in areas containing ponderosa pine.⁴

Fish and Wildlife Habitat Management

Goals/Objectives

- Improve identified areas of riparian habitat on public lands from poor or fair ecological condition to good ecological condition and maintain good and excellent ecological condition riparian habitat.^{1, 2, 4}
 - The purpose of this is to benefit a variety of wildlife including mule deer, rabbits and rodents, coyote and mountain lion, fur-bearers, waterfowl, American coot, common snipe, raptors, mourning dove, Gambel's quail, chukar, pheasant, reptiles, amphibians, approximately 70 other nongame species, bald eagle and peregrine falcon, State Sensitive Species, and aquatic species (beaver, fish, aquatic invertebrates).^{1, 4}
 - The desired vegetative composition to be obtained from riparian habitat improvement in this planning unit is 50 percent cottonwoods and willows, 30 percent perennial grasses and grass like plants (*Carex* and *Juncus*)¹ and 20 percent forbs.^{1, 2}
 - The desired vegetative composition to be obtained from riparian habitat improvement in the Zion Planning Unit is 60 percent cottonwoods and willows and 30 percent perennial grasses.⁴
 - Desired percent cover (vegetation and litter) in the Escalante Planning Unit is 70 percent.¹
 - Desired percent cover (vegetation and litter) in the Paria Planning Unit is 60 percent.²
- The desired vegetation composition to be obtained in riparian areas is 50 percent browse, of which 20 percent should be desirable trees and shrubs, 30 percent perennial grasses, and 20 percent forbs. Desired percent cover (vegetation and litter) is 60 percent.²
- Improve identified areas of pinyon-juniper habitat on public lands from poor or fair condition to good condition, and maintain identified areas of good condition pinyon-juniper habitat for a variety of wildlife species including mule deer, elk, rabbits and rodents, coyote and mountain

lion, fur-bearers, raptors, blue grouse, reptiles, bald eagle, State Sensitive Species, and approximately 60 other nongame species. The desirable vegetative composition to be obtained following treatments is 15 percent bitterbrush and mountain mahogany, 25 percent other shrubs, 30 percent grasses, and 30 percent forbs. Desired percent cover (vegetation and litter) is 70 percent for the treated areas. The desired composition on areas improved by grazing manipulation is 60 percent browse (10 percent desirable species), 20 percent grasses, and 20 percent forbs. The desired percent cover (vegetation and litter) for these areas is 60 percent on areas with good soil and 40 to 50 percent on areas with poorer soils.^{1,2}

- Improve identified areas of desert shrub, sagebrush, and grassland habitats on public lands from poor or fair condition to good condition, and maintain identified areas of good condition desert shrub, sagebrush, and grassland habitats for a variety of wildlife species, including mule deer, desert bighorn sheep, elk, rabbits and rodents, coyote and mountain lion, fur-bearers, raptors, mourning dove, chukar, reptiles, bald eagles, peregrine falcon, State Sensitive Species, and other nongame species. Areas with poorer soils will probably reach desired, or potential conditions at 10 to 20 percent less cover, and may have 20 to 30 percent more undesirable species.^{1,2}
- Treated areas should reach the desired conditions within three years following the treatment. Areas improved by grazing manipulation should reach the desired conditions within 10 years on most areas where soils are good.^{1,2}
- Manage wildlife habitat to favor a diversity of game and nongame species. Provide forage for current big game numbers and prior stable or long-term numbers in the future should populations increase and habitat improvement occur.⁵
- Protect against the loss of crucial big game habitat from encroachment by incompatible uses.⁵
- Expand the habitat use area and populations of desert bighorn sheep, Gambel's quail, chukar, and Utah prairie dog within the planning unit.²
- Protect all standing ponderosa pine trees on public lands within the planning unit as important wildlife habitat.²
- Increase the amount of bitterbrush and mountain mahogany in the vegetative composition from less than 5 percent to 10 percent on 14 allotments with serious deer-livestock grazing use conflicts.⁴
- Improve the condition and trend of mule deer habitat on summer range through forage allocation for potential deer numbers, and vegetative manipulation.⁴
 - The desired vegetative composition on the treatment sites is 40 percent browse including 10 to 15 percent bitterbrush and mountain mahogany, 30 percent grasses, and 30 percent forbs.⁴
- Improve the condition and trend of mule deer habitat winter range through:^{3,4}
 - Allocating forage for potential deer numbers and vegetative manipulation^{3,4}
 - Providing for water developments and resolution of grazing conflicts on important use areas³
 - The desired vegetative composition on the treatment sites is 40 percent browse including 10 to 15 percent bitterbrush and mountain mahogany, 30 percent grasses, and 30 percent forbs.⁴
- Improve habitat in poor condition on crucial deer winter range to reduce depredation on private lands.⁵
- Improve identified areas of aquatic stream habitat from poor or fair ecological condition to good ecological condition, and maintain identified areas of good and excellent ecological condition aquatic stream habitat for a variety of wildlife including fur-bearers, waterfowl, American coot, common snipe, amphibians, other nongame species, beaver, fish, and aquatic invertebrates. The desired conditions are:¹
 - Constant minimum flow of cool clear water.¹
 - Lush riparian habitat to provide shade, bank overhangs, cover, and nutrients for the aquatic community.¹
 - Good pool to riffle ratio.¹
 - Gravel stream bottoms free from sediment.¹
 - These conditions can be improved or reached within 5 years on areas where feasible.¹

- Maintain and enhance riparian and aquatic habitat on public lands for a variety of wildlife including big game, small game, and nongame species.³
- Improve riparian/fisheries habitat in areas currently in poor condition due to livestock grazing practices. Avoid deterioration of riparian/fisheries habitat currently in fair or good condition.⁵
- Expand the habitat for desert bighorn sheep and chukar by providing permanent water in areas where inadequate supplies now exist. These inadequacies should be corrected as soon as possible.^{1,2}
- Expand the habitat for pronghorn and Gambel's quail by providing permanent water in areas where inadequate supplies now exist. These inadequacies should be corrected as soon as possible.²
 - Provide for the water needs of pronghorn if and when a transplant is determined feasible by UDWR.¹

Decisions

- Improve the forage condition and trend on all poor and fair condition desert shrub, sagebrush, and grassland areas by grazing management. Maintain all good condition desert shrub, sagebrush, and grassland areas. Eliminate the conflict between mule deer, elk, and livestock where applicable on these habitats.¹
- Big game will be provided forage in the short term and the long term if big game numbers increase to prior stable or long-term levels and habitat is improved.⁵
 - Allocate forage to mule deer as recommended.^{1,2,3,4}
- Since there are no grazing systems proposed on custodial allotments, the vegetation composition is not apt to change. On those allotments where management systems will be developed, forage objectives will be determined in Allotment Management Plans on a case-by-case basis.³
- Improve the pinyon juniper habitat within the planning unit by burning and chaining identified areas.¹
 - These areas will have to be seeded with desirable wildlife browse, forbs, and native grasses following treatment.¹
 - Livestock will have to be excluded from treatment areas until seedlings are established (2 years minimum).¹
 - The desired vegetative composition to be achieved following treatment is 15 percent bitterbrush and mountain mahogany, 25 percent other shrubs, 30 percent perennial grasses, and 30 percent forbs. Desired percent cover (vegetation and litter) is 70 percent. The desired conditions should be reached within three years on most areas following treatment.¹
 - In addition to the specified treatment areas, all pinyon-juniper areas should be considered for prescribed burning as long as private, State, and USFS lands will not be jeopardized.¹
 - Sagebrush areas on all deer winter range could be burned on a small "spot" scale provided other favorable browse species could become established.¹
- Improve the forage condition and trend of the key forage species on all poor and fair condition pinyon-juniper habitat.²
 - Closely monitor livestock utilization and reduce livestock use and/or change the season of use as necessary on areas of pinyon-juniper where trend and condition of important browse species warrants.²
 - The desired vegetation composition to be achieved is 60 percent browse (10 percent desirable species), 20 percent grasses, and 20 percent forbs. Desired percent cover (vegetation and litter) is 60 percent on areas with good soil and 40 to 50 percent on areas with poorer soils. These desired conditions should be reached within 10 years on most areas with good soils.²
- Improve the quality and quantity of forage and provide AUMs for mule deer by chaining or burning identified areas of pinyon-juniper, and spraying or burning identified areas of sagebrush in important deer winter use areas.³

- Treatment sites would have to be planted with desirable browse, forb, and grass species following treatment.³
- Livestock would have to be eliminated from the land treatment sites until the sites are established (two or three years).³
- Funds are being made available for necessary fencing for treatment protection.³
- Chain or burn and reseed pinyon-juniper in important mule deer use areas.⁴
 - Exclude livestock grazing from the treatment sites until they are established (two years minimum).⁴
 - Provide fencing for protection of the treatment.⁴
 - Sugar Knoll Allotment will be grazed after seed ripe. Rest Mill Creek and Glendale Bench Allotments for two years.⁴
- Land treatments will be implemented to improve crucial big game habitat.⁵
- Improve habitat for deer and other species by implementing a modified fire suppression plan to limit control of wildfires, allowing wildfires to burn identified areas of poor condition pinyon-juniper and sagebrush habitat.^{3,4}
 - Exclude frail watershed areas from the limited control area.³
 - Human life and private property would not be jeopardized in these areas.^{3,4}
 - Many areas have little vegetative groundcover and would have to be reseeded after a fire.^{3,4}
 - Proposed ponderosa pine planting areas would be excluded from the fire plan when the areas are planted.⁴
 - There will be no ponderosa pine transplanting.⁴
- Seven Habitat Management Plans (HMP) will be written and will include the objectives of improving wildlife habitat condition from poor to fair or good on mule deer habitat, elk habitat, and pronghorn habitat.⁵
- Additional studies of crucial deer winter range will be conducted in cooperation with UDWR in the Garfield Planning Unit. If additional areas are determined to contain crucial winter range, appropriate resource protection actions will be taken (e.g., oil and gas stipulations).⁵
- Investigate the possibility of introducing beaver and constructing structures in streams. This investigation must include coordination with UDWR, and the State Engineer, owners of water rights, and the public. If beaver can be introduced and structures can be built, develop plans to identify what structures, if any, would be needed in the interim to maximize habitat potential. If beaver cannot be introduced but structures can be put in place, construct structures as needed that are identified in the recommendations.¹
- Protect riparian areas from all surface disturbing activities including excessive livestock grazing.¹
 - Protection from livestock grazing can be provided by fencing.¹
 - Restrict motorized vehicle use to existing roads in riparian areas.¹
 - Do not allow lease operations or sale of mineral materials from riparian areas.¹
- Provide for complementary use of waters for wildlife and livestock where the facility has the capability to supply both. These larger developments to supply livestock water will also require funding and technical advice from the range management program. Use hand construction methods and keep all developments small and unobtrusive wherever possible, especially in bighorn sheep and VRM Class II area.²
 - Develop present use area water needs for pronghorn, desert bighorn sheep, Gambel's quail, and chukar (by priority) as capabilities exist; maintain water throughout the spring and fall in all existing livestock range improvements (e.g., tanks, pipelines), within pronghorn, Gambel's quail, and chukar present use areas.²
 - Priorities for water development are given in the tables (of the MFP) for each species. Priority for water needs by species is desert bighorn sheep, pronghorn, Gambel's quail, and chukar. The first three water needs for desert bighorn sheep must be completed within the next two years. Priorities 1 through 7 for pronghorn, 1 through 10 for Gambel's quail and chukar, and the remainder of the desert bighorn sheep water needs should be completed

- within five years. The remainder of the pronghorn, Gambel's quail, and chukar water needs should be developed within ten years. Water should be made available in existing livestock waters within pronghorn, Gambel's quail, and chukar present use areas starting in the spring of 1979.²
- Provide water for pronghorn, within their range, at livestock waters from spring to fall even though livestock may be removed.²
 - Improve mule deer habitat and mule deer distribution by developing reservoirs, catchments, and tricklers in areas with limited water sources and fence to prevent trampling damage from livestock.³
 - Livestock water developments in the vicinity of proposed wildlife water developments will be designed to serve both wildlife and livestock purpose.³
 - Allow livestock grazing on riparian habitat as proposed in the range management section. Monitor the grazing systems to be developed and implemented and make adjustments as necessary to achieve the wildlife objectives for riparian habitat.¹
 - Provide additional cover and water for a variety of wildlife by fencing identified reservoirs and springs to prevent trampling damage by livestock.³
 - In funding projects, water will be made available to livestock as needed. Each proposed fence will be built only after a feasibility determination and after consultation with interested and/or affected parties. Provide protection for maintenance and improvement of riparian habitat by implementing the following.³
 - Continue to protect riparian habitat in good condition which is not presently used by livestock. Also eliminate livestock grazing from the upper portion of Water Canyon Allotment.³
 - Fence only good or fair condition riparian habitats: North Fork Virgin River (Lower North Fork, Upper North Fork, Table Mountain Allotments), Lydia's Canyon (Lydia's Allotment), and Fuller Cove (Upper Place) (60 acres). This would require about five miles of fencing.⁴
 - Protect approximately six stream miles in the Virgin River by constructing a type 4 drainage fence across the East Fork of the Virgin River at a point where the canyon narrows. This action would require less than 200 feet of fence.³
 - Eliminate livestock use in the south and southeast portions of the Poverty Flat Allotment after seedlings are established in the north half of the allotment. This action will result in the protection of 7.6 miles of stream.³
 - Riparian/fisheries habitat will be improved by restricting or eliminating livestock grazing in identified areas. These areas are included of the HMPs.⁵
 - Build fence to allow regulation of livestock grazing. Achieve desired habitat conditions on the remaining riparian areas through utilization and season of use regulation on livestock.¹
 - Deterioration of riparian/fisheries habitat will be avoided on streams currently identified in fair or good condition.⁵
 - UDWR has identified the Garfield Planning Unit as a potential pronghorn transplant area. BLM will cooperate with UDWR in establishing a population goal in balance with habitat availability. The actions will be fully addressed during the development of the Garfield HMPs.⁵

Wildland Fire Ecology and Management

Wildland fire ecology and management decisions in the Escalante, Paria, Vermilion, and Zion MFPs and the CBGA RMP have been amended. Management in all five existing land use plans is as follows:

Goals/Objectives^{1, 2, 3, 4, 5}

- Firefighter and public safety would be the primary goal in all fire management decisions and actions.

- Wildland fire would be used to protect, maintain and enhance resources and, when possible, be allowed to function in its natural ecological role.
- Hazardous fuels would be reduced to restore ecosystems; protect human, natural and cultural resources; and reduce the threat of wildfire to communities.
- Fires would be suppressed at minimum cost, taking into account firefighter and public safety and benefits and values to be protected, consistent with resource objectives.
- BLM would provide a consistent, safe and cost-effective fire management program through appropriate planning, staffing, training, equipment and management.
- Every area with burnable vegetation would have a Fire Management Plan (FMP) based on a foundation of sound science.
- Emergency stabilization, rehabilitation, and restoration efforts would be undertaken to protect and sustain resources, public health and safety and community infrastructure.
- BLM would work together with their partners and other affected groups and individuals to reduce risks to communities and restore ecosystems.
- The general Desired Wildland Fire Condition (DWFC) is to have ecosystems that are at a low risk of losing ecosystems components following wildfire, and that function within their historical range. In terms of FRCC, the DWFC outside Wildland-Urban Interface (WUI) is to trend to a lower FRCC using the least intrusive methods possible. In other words, the DWFC is to move lands in FRCC 3 to FRCC 2 and lands in FRCC 2 to FRCC 1 through fire and non-fire treatments where wildland fire use is the preferred method of treatment, when feasible. Inside the WUI, the general DWFC is to have less potential for values to be threatened by wildland fire, usually through some modification of fuels. Table 31 identifies DWFC by major vegetation type as well as actions needed to meet DWFC.

Table 31. DWFC by Major Vegetation Group and Actions Needed to Meet DWFC

Major Vegetation Group	DWFC and Actions Needed to Meet DWFC
Salt Desert Scrub	<p>The DWFC, both outside and inside the WUI, is native, open salt desert scrub vegetation with little to no invasive species cover. Fire would be mostly excluded from these vegetation types. Due to the historical lack of surface fuels, the historical fire return interval is extremely infrequent.</p> <ul style="list-style-type: none"> • Due to the historical lack of fire and current potential for cheatgrass invasion, do not allow wildland fire to burn into salt desert scrub vegetation types. Wildland fire is not desired due to high potential for cheatgrass invasion following wildfire and loss of native salt desert scrub communities. • Treat salt desert scrub types using a combination of mechanical, chemical, seeding and biological treatments to reduce cheatgrass cover and restore native communities. Prescribed fire may be used in conjunction with seeding when part of a cheatgrass control objective. • Due to the high incidence of cheatgrass in this vegetation type, consider seeding following any surface-disturbing activity. • Following wildland fire, aggressively seed to reduce potential for cheatgrass and other noxious weed invasion.
Pinyon and Juniper Woodland	<p>Where pinyon and juniper occurred historically, the DWFC both outside and inside the WUI is open stands of pinyon and juniper with native grass and shrub understory. Where pinyon and juniper did not occur historically, the DWFC is the native shrub, grass and forest communities that the pinyon and juniper have invaded. The historical role of fire (estimated 15-50 year fire return interval) prevented encroachment of pinyon and juniper into other vegetation communities. Most pinyon and juniper encroachment has occurred in the past 100 years. Follow treatments with seeding in FRCC 2 and FRCC 3 stands, which lack native understory vegetation. Historical occurrence of pinyon and juniper is difficult to map, but pre-settlement trees are generally located in shallow, rocky soils and tend to have unique growth form characterized by rounded, spreading canopies; large</p>

Major Vegetation Group	DWFC and Actions Needed to Meet DWFC
	<p>basal branches; large irregular trunks; and furrowed fibrous bark. Historic fire return intervals in these protected sites are greater than 100 years.</p> <ul style="list-style-type: none"> When possible, allow wildland fire to play its natural role, which mimics the historical fire-return interval and severity in FRCC 1 and FRCC 2 lands that have some cover of native understory vegetation. Due to the high risk of losing key ecosystem components in FRCC 2 (lacking native understory vegetation) and FRCC 3 lands, avoid wildland fires in these areas. Prescribed fires should be applied to pinyon and juniper communities when native surface fuels will carry fire and when there is low risk of invasive species. Prescribed fire should be used to approximate historical fire return intervals and promote recovery of the pre-settlement vegetation cover types. Remove most young (<100 years old) pinyon and juniper trees through fire or mechanical treatments. In the WUI, construct fuel breaks between BLM and private land or other values at risk. Following wildfire in FRCC 3 (and some FRCC 2 areas that are lacking native understory vegetation), aggressively seed to reduce invasive species establishment and to restore native communities.
Sagebrush	<p>The DWFC, both outside and inside the WUI, is healthy sagebrush defined as diverse age classes with an understory of native grasses and forbs. Research suggests that stand-replacement burned every 10–100 years depending on the particular sagebrush species and its associated habitat. Fire management actions in sagebrush must be carefully balanced between invasive species concerns, wildlife habitat and the need to restore fire.</p> <ul style="list-style-type: none"> When possible, allow wildland fire to play its natural role, which mimics the historical fire-return interval and severity in FRCC 1 and FRCC 2 lands that have a low potential for cheatgrass invasion. Areas with low potential for cheatgrass invasion include higher elevation sites and/or sites that have very low incidence of cheatgrass pre-fire. Treat dense sagebrush (>30%) with fire, mechanical or chemical treatments to reduce sagebrush canopy cover and improve native grass and forb density and cover; an additional objective in treating sagebrush is to remove encroaching pinyon and juniper trees. In the WUI, construct fuel breaks between BLM and private land (or other values at risk) in dense stands of sagebrush. Following wildfire in FRCC 2 and FRCC 3 lands, aggressively seed to promote native understory grasses and forbs and reduce invasion of cheatgrass and noxious weeds. Consider including sagebrush in seeding mixes or planting sagebrush seedlings in high-value wildlife areas following large, high-severity wildfires when natural seed sources would be lacking.
Grassland	<p>Where native grasslands occurred historically, the DWFC outside the WUI is native grass and forb communities. Native grasslands have been lost to pinyon and juniper encroachment, cheatgrass invasion, and non-native plant seedlings (e.g., crested wheatgrass, perennial ryegrass, etc.). Where non-native grasslands occur, the DWFC is the restoration of the native grassland or shrub community. The historical role of fire in Utah's grasslands was similar to pinyon and juniper and sagebrush community types with fires every 15–50 years.</p> <ul style="list-style-type: none"> When possible, allow fire to play its natural role, which mimics the historical fire-return interval and severity. Treat native grasslands with fire, mechanical or chemical treatments to reduce encroaching trees (mainly juniper), shrubs and invasive plants. Fire treatments alone should be avoided where there is potential for cheatgrass invasion (areas below 7000 feet that have adjacent cheatgrass populations). In the WUI, consider green stripping between BLM and private lands and other values risk. Following wildfire in FRCC 2 and FRCC 3 lands, aggressively seed to reduce potential for cheatgrass and other invasive weeds.
Mountain Shrub	<p>The DWFC outside of the WUI is stands with patches of differing age classes. In the WUI, the DWFC is greatly reduced vegetation density or a conversion to less-flammable</p>

Major Vegetation Group	DWFC and Actions Needed to Meet DWFC
	<p>vegetation, between BLM and private lands or other values at risk.</p> <ul style="list-style-type: none"> • When possible, allow fire to play its natural role, which mimics the historical fire-return interval and severity in all FRCCs. • Treat large expanses of even-aged, dense, homogenous stands to result in patches of diverse age classes. To achieve greater habitat diversity and decreased potential for large-scale high-severity fire, reduce invasion of pinyon and juniper and reduce the average age of stands through fire, mechanical or biological (i.e., grazing goats) treatments. In the WUI, consider aggressive vegetation manipulation to create fire breaks in highly flammable shrub types (e.g., Gambel oak) when there are values at risk. • Since most of these species sprout following wildfire, consider seeding only to reduce potential for invasive weeds.
Mixed Conifer	<p>The DWFC outside the WUI is landscapes with a mosaic of age classes. In the WUI, the DWFC is reduced canopy density and reduced ladder fuels between BLM and private lands and other values at risk.</p> <ul style="list-style-type: none"> • When possible, allow fire to play its natural role, which mimics the historical fire-return interval and severity in FRCC 1 and FRCC 2 stands. In FRCC 3 stands (dense stands with high fuels loadings), consider mechanical treatments prior to reintroducing fire. • Treat areas to result in a landscape of diverse age classes while retaining patches of large old trees. In the WUI, remove ladder fuels and create shaded fuel breaks between BLM and private land when values are at risk. • Consider tree planting following wildland fire to restore or rehabilitate the forest resource to promote forest regeneration.
Ponderosa Pine	<p>The DWFC, both outside and in the WUI, is open stands with a native grass and forb understory.</p> <ul style="list-style-type: none"> • When possible, allow fire to play its natural role, which mimics the historical fire-return interval and severity. Restore fire (natural or prescribed fire) to FRCC 1 and FRCC 2 stands. • Consider mechanical treatments in dense FRCC 3 stands until they reach a lower FRCC before restoring fire. Reduce juniper encroachment through fire (preferred when fuels conditions allow) or mechanical treatments. In the WUI, remove ladder fuels and create fuel breaks between BLM and private land and other values at risk. • Following wildfires, consider seeding to reduce invasive weeds and planting ponderosa pine seedlings for forest restoration and rehabilitation.
Riparian Wetland	<p>The DWFC, both outside and inside the WUI, are riparian and wetland areas with the appropriate composition of native species (e.g., reduction of tamarisk and other invasive species).</p> <ul style="list-style-type: none"> • When possible, allow fire to play its natural role, mimicking the historical fire-return interval and intensity. Allow low to moderate severity fire to burn into riparian and wetland areas when natural ignitions are managed as wildland fire use. • Restore native riparian and wetland species through fire and mechanical treatments. Reduce flammable invasive species along riparian corridors (e.g., tamarisk) through mechanical, chemical, biological and fire treatments. For prescribed fire, allow low intensity fire to back into riparian and wetland areas through ignition outside of these areas. Mechanical treatment as the initial treatment would be emphasized where there is a moderate to high potential for riparian and wetland to be burned to a high severity. • Consider active restoration options when native riparian and wetland communities are unlikely to recover with passive restoration (due to invasive species, stream bank erosion, etc).
Aspen	<p>The DWFC, both outside and inside the WUI, is healthy clones with diverse age classes represented and ample regeneration.</p>

Major Vegetation Group	DWFC and Actions Needed to Meet DWFC
	<ul style="list-style-type: none"> • When possible, allow fire to play its natural role that mimics the historical fire-return interval and severity in all FRCC as aspen readily sprouts following fire. • Treat aspen stands with fire or mechanical treatments to reduce encroaching junipers and conifers and to stimulate sprouting. If treated aspen stands are small, consider excluding big game and livestock until the regeneration can withstand grazing. In the WUI, consider increasing aspen cover if possible to create a shaded fuel break between private land (and other high value areas) and the more flammable conifer trees on BLM land. • Following wildfire, most aspen stands would need little stabilization, except soil stabilization on steep slopes. However, burned areas may need to be fenced to exclude wildlife and livestock until the regeneration can withstand grazing.

Source: BLM 2005d

Decisions^{1, 2, 3, 4, 5}

Fire Management Strategies and Actions^{1, 2, 3, 4, 5}

- The appropriate management response would be provided to all wildland fires, emphasizing firefighter and public safety and considering suppression costs, benefits and values to be protected. The appropriate management response would be consistent with resource objectives, standards and guidelines. Response to wildland fire would be based on ecological and social costs and benefits of the fire. The circumstances under which the fire occurs and the likely consequences to firefighter and public safety and welfare, natural and cultural resources and values to be protected, would dictate the appropriate management response to the fire. Fire Management Unit objectives (as included in the FMP), would further guide the appropriate management response.
- Wildland fire would be used to protect, maintain and enhance resources and, when possible, would be allowed to function in its natural ecological role. Areas where wildland fire use is appropriate and not appropriate are identified in Table 31. The FMPs would provide further operational guidance for wildland fire use.
- To reduce risks and to restore ecosystems, the following fuels management tools would be allowed: wildland fire use, prescribed fire, and mechanical, chemical, seeding, and biological actions. As conditions allow, BLM would employ the least intrusive method over more intrusive methods. For example, wildland fire use is the preferred method of treatment. Where wildland fire use is not feasible, prescribed burning would be the preferred method. Where prescribed burning is not feasible, non-fire fuels treatments would become the preferred method of treatment.
- Work with partners in the WUI in wildland firefighting, hazardous fuels reduction, cooperative fire prevention education and technical assistance. Unauthorized wildland fire ignitions would be prevented through coordination with partners and affected groups and individuals. The full range of prevention and mitigation activities would be used: personal contacts, mass media, education programs and signage.
- The following Emergency Stabilization and Rehabilitation actions (after wildfire suppression) and restoration for planned actions may be utilized to reduce potential for soil erosion and invasive species spread: seeding or planting native and/or non-native species; applying approved herbicides; implementing soil stabilization measures (e.g., stabilization structures, mulches); protecting cultural resources; repairing or replacing facilities; fencing, herding or removing livestock and/or horses; and resting allotments. Specific actions could include brush/tree chopping; contour tree felling; silt catchments; waddles, straw or fabric silt traps; mulching; drill seeding; aerial seeding; aerial seeding followed by mechanical seed covering (chaining,

harrowing or other mechanical means); planning seedlings; fence construction or rebuilding; road/trail maintenance or closures; cattle guards; road culvert installation or cleaning; water bars; sign installation and maintenance; herbicidal or mechanical weed treatments; weather station installation and maintenance; repairing or rebuilding of minor facilities (cross fencing, wildlife structures, recreational facilities).

- Monitoring actions would be undertaken to determine results from fire management decisions and actions. Monitoring results would be used in determining the need for further amendment or revisions.

Wildland Fire Suppression Objectives and Management Actions^{1, 2, 3, 4, 5}

- Fires would be suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.
- BLM would provide a consistent, safe, and cost-effective fire management program through appropriate planning, staffing, training, equipment, and management.
- Table 32 shows the 15-year Cumulative Maximum Burned Acres for wildfires (used for analysis purposes only – if these acres are exceeded, it may trigger re-analysis):

Table 32. 15-Year Cumulative Maximum Burned Acres

Planning Unit	Acres
Escalante MFP	4,000
Paria MFP	6,000
Vermilion MFP	4,000
Zion MFP	25,000
Cedar-Beaver-Garfield-Antimony RMP	130,000*
Total	169,000*

Note: * - CBGA acres are not limited to Garfield Planning Unit, but include all four planning units. Acres shown include acres outside decision area.

Source: BLM 2005d

Limited Suppression and Wildland Fire Use Objectives and Actions^{1, 2, 3, 4, 5}

- Though specific areas for wildland fires use would be identified in the FMPs, wildland fire use may be authorized for all areas, except when the following resources and values may be negatively impacted and there are no reasonable Resource Protection Measures to protect such resources and values:
 - WUI areas
 - Areas that are known to be highly susceptible to post-fire cheatgrass or invasive weed invasion
 - Important terrestrial and aquatic habitats
 - Non-fire adapted vegetation communities
 - Sensitive cultural resources
 - Areas of soil with high or very high erosion hazard
 - Class I air-shed areas and PM₁₀ non-attainment areas
 - Administrative sites
 - Developed recreation sites
 - Communication sites
 - Oil, gas, and mining facilities
 - Above-ground utility corridors

- High-use travel corridors, such as interstates, railroads and/or highways
- Table 33 shows the 15-year Cumulative Maximum Acres for Wildland Fire Use.

Table 33. 15-Year Cumulative Maximum Acres for Wildland Fire Use

Planning Unit	Acres
Escalante MFP	100
Paria MFP	100
Vermilion MFP	0
Zion MFP	100
Cedar-Beaver-Garfield-Antimony RMP	0*
Total	300*

Note: * - CBGA acres are not limited to Garfield Planning Unit, but include all four planning units. Acres shown include acres outside decision area.

Source: BLM 2005d

Prescribed Fire Objectives and Actions^{1, 2, 3, 4, 5}

- All prescribed fire acres would be for a primary purpose of hazardous fuels reduction or community protection from fires. While these acres would likely also accomplish other resource objectives, this plan aims to directly analyze effects from fire management decisions.
- Table 34 shows the 15-year Cumulative Maximum Acres for Prescribed Fire:

Table 34. 15-Year Cumulative Maximum Acres for Prescribed Fires

Planning Unit	Acres
Escalante MFP	4,000
Paria MFP	6,000
Vermilion MFP	15,000
Zion MFP	25,000
Cedar-Beaver-Garfield-Antimony RMP	80,000*
Total	130,000*

Note: * - CBGA acres are not limited to Garfield Planning Unit, but include all four planning units. Acres shown include acres outside decision area.

Source: BLM 2005d

Non-Fire Fuels Objectives and Actions^{1, 2, 3, 4, 5}

- All non-fire treatment acres would be for a primary purpose of hazardous fuels reduction or community protection from fires. While these acres would likely also accomplish other resource objectives, this plan aims to directly analyze effects from fire management decisions.
- Table 35 shows the 15-year Cumulative Maximum Acres for Non-Fire Fuels Treatments:

Table 35. 15-Year Cumulative Maximum Acres for Non-Fire Fuels Treatments

Planning Unit	Acres
Escalante MFP	4,000
Paria MFP	6,000
Vermilion MFP	20,000
Zion MFP	30,000
Cedar-Beaver-Garfield-Antimony RMP	100,000*
Total	160,000*

Note: * - CBGA acres are not limited to Garfield Planning Unit, but include all four planning units. Acres shown include acres outside decision area.

Source: BLM 2005d

Emergency Stabilization and Rehabilitation Objectives and Actions^{1, 2, 3, 4, 5}

- Table 36 shows the 15-year Cumulative Maximum Acres for Emergency Stabilization and Rehabilitation:

Table 36. 15-Year Cumulative Maximum Acres for Emergency Stabilization & Rehabilitation

Planning Unit	Acres
Escalante MFP	4,000
Paria MFP	6,000
Vermilion MFP	4,000
Zion MFP	25,000
Cedar-Beaver-Garfield-Antimony RMP	130,000*
Total	169,000*

Note: * - CBGA acres are not limited to Garfield Planning Unit, but include all four planning units. Acres shown include acres outside decision area.

Source: BLM 2005d

Criteria for Establishing Fire Management Priorities^{1, 2, 3, 4, 5}

- Protection of human life is the primary priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources would be based on human health and safety, the values to be protected, and the costs of protection. Priorities for all aspects of fire management decisions and actions would be based on the following:
 - WUI
 - Maintain existing healthy ecosystems
 - High priority sub-basin (HUC 4) or watershed (HUC 5)
 - Special status species
 - Cultural resources and cultural landscapes

Resource Protection Measures for Fire Management Practices^{1, 2, 3, 4, 5}

- Resource Protection Measures for fire management practices to protect natural or cultural resource values are described in the Utah Land Use Plan Amendment for Fire and Fuels Management Finding of No Significant Impact and Decision Record, Table 2.3.

Cultural Resources Management

Goals/Objectives

- Protect the cultural and historic values from accidental or intentional destruction and give special protection to high value cultural and historic sites.⁵
- The cultural resource program operates on an SOP basis. The following functions will continue to occur as at present.²
 - Inventory process (clearance Class III)²
 - Protection and preservation (random and as identified)²
 - Random contribution of results to research²
- Preserve a representative sample of archeological sites for future use.³

Decisions

- In accordance with law and policy, require cultural resources clearances and mitigations on all projects involving surface disturbing activities prior to construction or development.⁵
- Complete a cultural resource inventory and map depicting site densities and archeological values within the Garfield Planning Unit. The map will be used as a planning tool to identify avoidance areas and gauge potential impacts to cultural resources before projects are proposed which may affect cultural values.⁵
- Provide funding for a Class II sample oriented inventory of the Paria Planning Unit. The inventory will involve development of an appropriate research design. Although implementation of a Class II inventory is a cultural resource program decision, it also functions in a support role to other activities. While timing and funding of the survey may best coincide with other activity needs, development of the research design should be carried out well in advance of anticipated large scale resource conflicts.²
- Ensure that cultural values are protected from recreation use by stabilization, excavation, or other appropriate means.^{1, 3}
- Nominate the Crescent Butte Ruins (42KA1549) to the National Register of Historic Places.³

Paleontological Resources Management

Paleontological resources management in the decision area was not specifically addressed in the Escalante, Paria, Vermilion, or Zion MFPs, or the Cedar-Beaver-Garfield-Antimony RMP.

Visual Resources Management

Goals/Objectives

- Maintain or improve, where possible, the quality of visual resources.^{1, 2, 3, 4}
- Plan, modify, and implement resource management activities in a manner that will minimize impacts to visual resources. Apply special emphasis in environmental assessment and project design to projects in the scene area (foreground visual zone) in order to meet VRM objectives.⁵

Decisions

- Manage VRM classes according to Map 11.^{1, 2, 3, 4, 5}
 - Class I: 21,400 acres
 - Class II: 99,900 acres
 - Class III: 68,600 acres

- Class IV: 321,800 acres
- Unknown: 42,600 acres
- Consider VRM objectives in all projects or actions that would affect VRM classes. Prior to implementing any project, perform a detailed onsite analysis of the impacts on visual resources before making a determination whether or not work on the project should proceed. There could be cases where the benefits of a particular project outweigh the benefits of retaining the objectives of a VRM class.^{1, 2, 3, 4}
- Design and mitigate surface disturbing activities to meet VRM objectives where possible. Priority will be given to maintain VRM objectives in the foreground visual zone in VRM Class II areas and every attempt will be made to meet those VRM objectives through mitigation.⁵
- Rehabilitate visual intrusions.^{2, 3, 4}
- As time and funds permit, check the intrusions that remain on public land and either mitigate the impact they cause, or have them removed. Most of the visual intrusions have either been removed, corrected, or are not under the management authority of the BLM. The remainder are currently being improved through management actions.¹
- Close and rehabilitate only those ways, seismic lines, etc., which are causing resource damage or are definitely detracting from the visual resources. Rehabilitation must be possible without worsening the situation. Careful consideration must be given on a case-by-case basis before any such "way" is closed.¹

Wilderness Characteristics Management

Wilderness characteristics management was not specifically addressed in the Escalante, Paria, Vermilion, or Zion MFPs, or the Cedar-Beaver-Garfield-Antimony RMP although naturalness, opportunities for solitude, and opportunities for primitive recreation are addressed in other sections (see Visual Resources Management and Recreation Management sections)..

RESOURCE USES

Resource uses involve activities that utilize the natural, biological, and/or cultural components of the decision area, such as livestock grazing, recreation, and mineral management.

Forestry and Woodland Products Management

Goals/Objectives

- Provide a continuous supply of a variety of forest products from public lands for both commercial and noncommercial uses.^{3, 4}
- Manage woodland stands to supply woodland products on a sustained basis for fuelwood, posts, pine nuts, and Christmas trees at fair market value.⁵
- Authorize harvest of woodland products which approximates the biological capability of the stands to replace its harvested trees.⁵
- Increase the accessibility to and within the woodland stands to more fully utilize woodland stands.⁵

Decisions

- The unit will remain open to the collection of fuelwood for private use, subject to the following stipulations:^{1, 5}
 - Collection (of ponderosa pine¹) will be limited to down wood only.^{1, 4, 5}

- Granting of permits will avoid surface protection and reclamation areas.¹
- The Area Manager may designate areas where harvesting of green wood will be permitted under conditions he will specify.¹
- Allow harvesting of all dead and down tree species unitwide.⁴
- Establish an area totaling 10,196 acres (within Buck Pasture, Elephant Cove, Sethy's Canyon, and Yellowjacket Allotments) for harvest of approximately 104,500 cords of fuelwood.³
 - Both sales and free use disposals of fuelwood can be conducted in these areas.³
 - Harvest in these areas is limited to live oak, pinyon, and juniper; no other species can be harvested.³
 - Woodcutting would not be allowed in the Harris Mountain area to avoid conflicts with a VRM class II area.³
 - The parts of the recommendation that are in proposed WSAs must be protected pursuant to interim protection policy until proposals on the WSA are completed.³
- Establish two harvest areas, totaling 3,090 acres, containing less than 29,450 cords of fuelwood (see Table 37).⁴
 - Both sales and free use disposals of fuelwood may be conducted in these areas.⁴
 - All pinyon and juniper stems larger than 3 inches diameter at 1 inch above the ground, and oak stems greater than 3 inches diameter and 6 inches tall may be harvested. All juniper posts harvested from these areas must be sold.⁴
 - Areas recommended for protective watershed management are excluded from harvest area boundaries.⁴
 - Reduce impact to vegetation treatment recommendations by concentrating harvest activity in small subdivisions in overlapping recommendation areas, according to treatment priorities prescribed by other resources.⁴
 - Rangeland treatments will only be delayed in these areas until sufficient funding is obtained to perform land treatments.⁴

Table 37. Woodland Harvest Areas

Priority	Allotment	Acres
1	Zion	1,490
	Burnt Flat	600
2	Mill Creek	1,000
Total		3,090

- Prohibit commercial sales of all fuelwood within green wood cutting areas in Cedar and Beaver Planning Units and limit cutting of oak to 10 cords per family per year. Commercial cutting outside green cutting areas may be authorized to achieve objectives of other programs.⁵
- Continue to authorize the sale of fuelwood and posts through the EA process within the Garfield Planning Unit. Dead and downed wood will be sold areawide and harvest of green fuelwood will be limited to green cutting areas to be established on a case-by-case basis as needed.⁵
- Leave the unit open to harvesting of juniper posts. Stipulations to avoid conflicts on specific sites (i.e. potential recreation sites, riparian areas) will be included in individual permits.^{1, 2, 5}
- Allow post and woodcutting activities on those areas identified in Table 38. This will be done on a trial basis to determine if tree cutting activities can be used as a successful land treatment practice to increase the composition of native grass and forb species. Clear-cut or heavily thinned areas on the Barracks Point Allotment will be broadcast seeded with a mixture of browse, forbs and grass species. The other areas will depend on the release of native vegetation for improvement. Perform an EA on each post and woodcutting project and design the project in such

a way as to eliminate or substantially mitigate the conflicts with VRM classes and wildlife habitat as identified in the impact analysis above.³

Table 38. Post and Woodland Cutting Activities

Allotment	Priority	Acres
Barracks Point	1	480
Twin Hollow	3	770
Kanab Creek	4	1,900
Total		4,190

- Leave entire unit open to harvesting of pinyon pine for Christmas trees.^{1, 2, 5}
 - Removal of ponderosa pine is expressly prohibited.¹
 - Christmas tree harvest would not be permitted in riparian areas and in potential recreation sites.²
- Exclude all designated recreation sites, outstanding natural areas, and areas of recent surface reclamation work from commercial wood product disposals.¹
- Prohibit cutting of standing ponderosa pine in all commercial wood product contracts.¹
- To the extent feasible, schedule commercial sales on those sites identified by other resources for woodland removal through land treatments.¹
- VRM II areas will be avoided but may be used at a future date with appropriate stipulations incorporated to protect these areas.¹
- Omit identified areas of heavily utilized vegetation from P-J and oak harvesting.⁴
- Leave the identified area open to small scale removal of wildings and other vegetative products upon application and permit.²
- Manage the woodland stands within the Beaver Planning Unit for the sustained production of woodland products (includes a portion of the decision area). Establish green wood cutting areas and provide additional access to and within those areas.⁵
- Continue to authorize harvest of pine nuts areawide.⁵
- Complete a Woodland Management Plan for Beaver Planning Unit. The Woodland Management Plan will identify needed access, establishment of green cutting areas, levels of harvest, use supervision, plan implementation, funding requirements, interpretive needs, and will supply an orderly schedule to provide for harvest of woodland products. An EA would be prepared for the activity plan and cover impacts of harvest so EAs would not be required for each sale.⁵
- Allow the harvest of woodland species with a maximum allowable harvest of 6,000 cords per year for the entire Cedar and Beaver planning units. Reduce from the maximum allowable harvest by 10 cords per acre as woodlands are taken out of the sustained yield base by land treatment (chainings, burnings) to a minimum of 3,750 cords per year. Place priority on salvaging woodland products before land treatments.⁵

Livestock Grazing Management

Allotments in the decision area that are managed under the Escalante¹ and Paria² MFPs will be addressed by the Livestock Grazing EIS being prepared by GSENM.

Goals/Objectives

- During the interim stop downward trend and maintain existing production of desirable livestock forage consistent with meeting plant and soil requirements.^{3, 4}

- Improve the forage condition and trend on identified areas of suitable and potentially suitable Federal range that are now in poor condition. Increase production through intensive grazing management and through land treatment projects.^{3,4}
- Achieve an upward trend on areas that are in a static or downward trend. Management objective will be to meet this potential over an 18 to 24 year time period.⁴
- To facilitate and improve livestock management initiate the following actions for the orderly administration and regulation of the range program in the Vermilion Planning Unit:³
 - Protect relict characteristics on Diana's Throne.³
 - Authorize feeding of certain supplements during the winter season.³
 - Authorize clear cutting of wood and posts on designated areas.³
 - To meet the present demand for livestock forage develop the remaining land treatment potential on Federal land in identified areas.³
- To facilitate livestock management and help improve forage condition on areas where burning has been designated as a method of land treatment, initiate a fire action modification plan incorporating modified fire suppression procedures.⁴
- Reduce or eliminate rangeland resource problems on all allotments identified for intensive management while maintaining a production goal of livestock forage in the long term.⁵
- Maintain or improve current resource conditions on all identified for maintenance of current management allotments while permitting livestock grazing use over the long term.⁵
- Continue current management on all allotments identified for custodial management while preventing further resource deterioration.⁵

Decisions

- See Table 18. Livestock Grazing Allotments for current livestock grazing forage allocations.^{3,4,5}
- Provide 618 additional livestock AUMs and graze 115 cattle needed to balance pastures for intensive grazing systems.³
- Requests by grazing permittees to feed supplements on public lands will continue to be handled on a case-by-case basis as such written requests are received. When it is determined on an individual basis that the feeding of supplements is in the interest of proper range management such requests will be approved.³
- The rest rotation grazing system will be stocked at the capacity of the allotment instead of the grazed pasture for the first year of the rotation cycle.^{3,4}
- For allotments that are to be grazed after seed ripe, no grazing will be allowed in the spring of the year of implementation.³
- Complete land treatments to provide additional AUMs needed to meet the demand for livestock forage and divide the AUMs proportionally among all operators, with the following exclusions:³
 - Identify band-tailed pigeon roost sites in the Barracks Point and Poverty Flat Allotments and do not destroy roosting sites through tree changes.³
- Complete land treatments to provide additional livestock AUMs needed to balance pastures for intensive grazing systems with the following restrictions:⁴
 - On frail watershed areas where treatments are proposed, chaining pinyon-juniper trees with slash left in place and spraying big sage will be the only accepted land treatment method.⁴
 - Multiple species will be used in reseeding to avoid monotype vegetation, and to ensure good forage species for livestock and wildlife and visual resources.⁴
 - Existing seedings will be modified as necessary to lessen the negative visual impacts.⁴
 - Before burning on areas identified for proposed strip mining, a clearance will be conducted in identified areas to prevent any exposed coal seam from becoming ignited.⁴
 - In areas identified as sandy soils, that are highly susceptible to wind erosion spraying sagebrush will be the only acceptable method of land treatment.⁴

- Initiate management prescriptions affecting season of use, grazing systems, and grazing use levels through formal grazing agreements, decisions, or AMPs. These prescriptions will be applied on all allotments identified as having one or more of the following characteristics to resolve problems and conflicts and meet objectives (Intensive Management Allotments):⁵
 - Present range condition is unsatisfactory.⁵
 - Allotments have moderate to high resource production potential and are producing at low to moderate levels.⁵
 - Serious resource use conflicts exist.⁵
 - Opportunities exist for positive economic return from public investments.⁵
 - Present management appears unsatisfactory.⁵
 - Other criteria appropriate to EIS area.⁵
- Continue current management practices to maintain or improve on resource conditions and to meet the objectives (Maintain Management Allotments):⁵
 - Present range condition is satisfactory.⁵
 - Allotments have moderate or high resource production potential and are producing near their potential (or trend is moving in that direction).⁵
 - No serious resource use conflicts exist.⁵
 - Opportunities may exist for positive economic return from public investments.⁵
 - Present management appears satisfactory.⁵
 - Other criteria appropriate to EIS area.⁵
- Continue current custodial management on all allotments which generally conform to the following criteria (Custodial Management Allotments):⁵
 - Present range condition is not a factor.⁵
 - Allotments have low resource production potential and are producing near their potential.⁵
 - Limited resource use conflicts may exist.⁵
 - Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.⁵
 - Present management appears satisfactory or is the only logical practice under existing resource conditions.⁵

Recreation Management

Goals/Objectives

- Provide for public health, safety, and resource protection through interpretation, facility development, and visitor management.¹
- Preserve and protect areas containing significant scenic splendor, natural values, cultural values, and scientific importance.^{1, 3}
- Expand opportunities for visitor enjoyment and use of sightseeing attractions, consistent with resource capabilities and mandated protection requirements.²
- Expand opportunities for sightseeing and public enjoyment of cultural and natural features.³
- Enhance collecting, observation, and recreational values of identified mineral resources for the general public.¹
- Develop recreation sites needed to accommodate users and to facilitate recreational uses of public lands.^{3, 4}
- Provide a safe and enjoyable recreation experience for all visitors to the Coral Pink Sand Dunes/Moquith Mountain area while managing and protecting natural resources.³
- Provide recreation opportunities under the Bureau's basic stewardship responsibilities for unstructured, extensive types of recreation uses, maximizing the visitor's freedom of choice. Continue to maintain important recreational values in Federal ownership to ensure this continued diversity of recreation opportunities.⁵

Decisions

- Manage the planning area as an ERMA, utilizing extensive, unstructured and custodial management principles.⁵
- Develop a brochure interpreting various historical, archaeological, paleontological, geological, botanical, and collecting resources throughout the planning unit. Regulations, including off-road vehicle use and collecting limitations, should be included in the brochure.¹
- Provide for the interpretation of the recreational opportunities within the planning area emphasizing off-road vehicle use, rockhounding, hiking, and sightseeing opportunities and values.⁵
- Provide directional signing to features when appropriate.¹
- Preserve physical remains of the Civilian Conservation Corps developments at Pine Springs. Inventory and interpret through signing.²
- Increase sightseeing opportunities for archaeological resources within the Paria Planning Unit through protective development and interpretation of two sites. Adequate protective measures to prevent loss of educational or scientific and sightseeing values must precede actions which increase accessibility to the public.²
- Develop a small overnight camping and trailhead facility at Sand Springs, involving about 40 acres, when visitor use data shows the Ponderosa Grove and Coral Pink Sand Dunes Park cannot meet the recreational needs of the area.³
 - Developments could include about three camp units, vault type restrooms, parking area, road improvements, fencing, and water development.³
 - An activity plan is needed to guide specific management activities. The plan should be developed in conjunction with activity planning for the Water Canyon/South Fork Indian Canyon ACEC.³
 - A hiking trail of about 1.5 miles should be constructed to link Sand Springs with the South Fork Indian Canyon Pictograph Site. The access road to the site should be closed from the point it intersects with the road which leads south from Sand Springs to Moquith Mountain.³
 - The segregation from mineral entry in the Sand Spring area should be maintained and mineral leasing operations prohibited.³
 - The Sand Springs area should be designated closed to off-road vehicles.³
- Protect and enhance opportunities for sightseeing of historical and archaeological resources. Table 39 shows the three sites that warrant attention and management needs. Development of these sites would involve about 140 acres.³

Table 39. Sightseeing Cultural Resources and Recommended Development

Area	Priority	Range Allotment	Acreage	Recommended Development
Cottonwood Cliff Dwelling	1	Trail Canyon	20	Fencing, signing, trail construction, legal access
Long Canyon Rock Art Canyon	2	Meadow Canyon	80	Trail construction, signing, fencing, legal access
Trail Canyon Overhang	1	Trail Canyon	40	Fencing, excavation, stabilization, signing, trail construction, legal access

- Ensure that cultural values are protected by stabilization, excavation, or other appropriate means.^{1,3}
- Develop an interpretive program which brings these resources into context.³
- Protect the resource values through lease stipulations.³
- Prepare a plan for each site to guide protection/development actions. Include consideration of directional signing, protection of cultural features, visitor protection, access, roads and

- parking areas, trail development, and interpretive development in each site plan. The specific characteristics and needs of each site will determine the application of management actions.³
- Enhance sightseeing associated with geology in the Vermilion Planning Unit by developing an interpretive program involving three geologic features (Sand dunes at Ponderosa Grove and Sand Springs; Sevier Fault White Cliffs at US Highway 89/Yellowjacket Road; Vermilion at existing turnout near Johnson Canyon). This will involve development of new turnouts along roads, including one on US Highway 89, and installation of interpretive signs. A plan will be developed to guide interpretation and development for each feature.³
 - Protect 1,280 acres in the Water Canyon/South Fork Indian Canyon area:³
 - Close to off-road vehicle use, but allow for maintenance vehicles for Fredonia's water pipelines.³
 - Put no surface occupancy stipulation on oil and gas leasing.³
 - Prepare a management plan. During management plan preparation consider means of improving and or removing all or part of Fredonia's water system to better conform to the surrounding natural values if it can be assured that another source of water can be developed feasibly.³
 - Camping rules in the Coral Pink Sand Dunes/Moquith Mountain area will be standardized for both State Park and BLM designated campgrounds. The dry lake bed and Sand Spring will continue to be available for dispersed motorized camping. Limits on numbers of recreation units camping in the dry lake bed will be based on continued monitoring (but will not exceed 50 units). The area available for camping will not exceed four acres in size.³
 - A contact station and parking area (up to five acres) will be constructed at the junction of the Yellowjacket and Hancock Roads. The purpose of the contact station will be to provide information regarding management of the Coral Pink Sand Dunes and to act as the access point prior to entry to both BLM administered portion of the dunes and the State Park. The facility will accommodate visitors who are interested in obtaining both a motorized and non-motorized type of recreation experience and direct visitors to the area where they could obtain an optimum experience for the type of recreation they are seeking.³
 - Expand and improve facilities at Ponderosa Grove. An activity plan should be developed to guide future development. Needed improvements will include well and water system, traffic circulation and parking and additional picnic units. Space is available in the present site for most improvements with the possible exception of the well site.³
 - The Ponderosa Grove Campground will be expanded up to five acres to include additional camping units and a day use area. A day use facility (up to two acres) will be developed and maintained near the junction of the Hancock and Sand Spring Roads. Once these (as well as State Park improvements to camping facilities) are in place, no camping or OHV riding will be allowed for one-quarter mile north of Hancock Road.³
 - BLM and the State of Utah will continue to implement necessary safety measures to protect visitors in the Coral Pink Sand Dunes/Moquith Mountain area. Emphasis will be placed on minimizing interaction between motorized and non-motorized use on the sand dunes and enforcement of existing State and Federal laws and policies. The existing OHV trails adjacent to Hancock Road will be closed. BLM and State Park personnel will continue to cooperate with local authorities on law enforcement matters.³
 - Develop the Glendale Bench archaeological site:⁴
 - Provide protection to the site through stipulations in the approval of mining plans and mineral leases.⁴
 - While the site can be interpreted and stabilized, if needed, excavation should be done by an academic or research institution.⁴
 - Exclude livestock use on the interpreted sites themselves. Exact acreage would be less than 510 acres.⁴

Transportation Management

Goals/Objectives

- Enhance opportunities for off-road vehicle use on public lands.^{1, 2, 3, 4}
- Provide a safe and enjoyable recreation experience for all visitors to the Coral Pink Sand Dunes/Moquith Mountain area while managing and protecting natural resources.³
- Assure continued use of roads and trails to public lands. Acquiring or maintaining access is considered a support function to this objective.⁴

Decisions

- Manage OHV area designations according to Map 14.^{1, 2, 3, 4, 5}
 - Open to Cross Country OHV use: 465,400 acres
 - OHV use Limited to Existing or Designated Routes: 66,200 acres
 - Closed to OHV use: 21,100 acres
- The decision area would be open to off-road vehicle use except those areas noted below.^{1, 2, 3, 4, 5}
- Off-highway vehicle use would be limited temporally or spatially in the following areas:
 - Limit vehicle use at developed sites to facilities specifically provided for that purpose, such as roads and parking areas.²
 - Limit off-road vehicle use to existing roads and trails in areas that have received artificial vegetative manipulation (i.e. range, watershed, or wildlife land treatments) for a minimum of two years after treatment.^{2, 4}
 - Encourage off-road vehicle participants to confine vehicles to existing roads and trails in all other areas which are suitable for livestock grazing. The latter category of areas should be indicated to recreationists by on-the-ground signing, identification on maps or brochures, as appropriate.²
 - Limit vehicle use in riparian areas to existing roads, trails, or ways which will remain open to public use.^{2, 4, 5}
 - Limit off-road vehicle use only to the identified critical watershed areas. The remaining frail watershed will remain open with a monitoring program developed to identify conflicts if they arise.³
 - Restrict vehicles to existing roads and ways on areas identified as frail watersheds.⁴
 - Limit off-road vehicle recreational use to existing roads and trails on crucial sage grouse strutting grounds (seasonal limitation between March 15 to May 1), nesting and roosting sites for bald and golden eagles (seasonal limitation between February 15 and June 30), or critical prairie dog habitat (yearlong limitation).⁵
- The following areas would be closed to off-highway vehicle use:
 - Frail watershed areas and riparian areas would be closed to OHV use.¹
 - Inventory and exclude critical species habitats from off-road vehicle use.²
 - Exclude all off-road vehicles from Cottonwood Canyon drainage (except for maintenance vehicles).³
 - Exclude off-road vehicles in the camping and trail head area for Sand Springs (Farm Canyon Allotment).³
 - Exclude off-road vehicles from all identified archaeological sightseeing areas.³
 - Exclude all off-road vehicles from riparian areas that are fenced to exclude livestock grazing.^{3, 4}
 - Land treatment areas would be designated as open with a temporary OHV closure of no less than two years following the land treatment.³
 - Close 1,280 acres in the Water Canyon/South Fork Indian Canyon area to off-road vehicle use, but allow for maintenance vehicles for Fredonia's water pipelines.³

- The Hancock Road OHV access route will be closed (5 acres) when a contact station is constructed at intersection of Hancock and Yellowjacket Roads. The OHV closure will extend one quarter mile north of Hancock Road between the Sand Spring and Yellowjacket Roads (500 acres). The existing OHV trails adjacent to Hancock Road will be closed. (Note: The contact station has yet to be completed, and therefore this closure is not currently applicable.)³
- Motorized use would be restricted from driving within or through islands of vegetation located within the Coral Pink Sand Dunes/Moquith Mountain area that will remain open to OHV use. Signs, barriers, and education efforts will accompany this action designed to maintain the naturalness of these areas.³
- The portion of the Moquith Mountain WSA remaining open to motorized use will be monitored to ensure that no new routes will develop and the character of existing routes will not change. If monitoring indicates that impairment may be occurring, then management actions would be implemented to protect wilderness values. Potential actions could include restricting the number of visitors or expanding the OHV closure.³
- Rules and regulations regarding OHV riding at the Coral Pink Sand Dunes/Moquith Mountain area will be standardized for those areas of the sand dunes remaining open to motorized use. These rules will apply to both BLM and State Park administered sand dunes.³
- Temporary emergency off-road vehicle limitations apply to motor vehicle travel within the Parunuweap Canyon WSA, Orderville Canyon WSA, and North Fork Virgin River WSA.⁶
 - OHV travel is limited to those travel routes and ways identified during the original wilderness inventory completed in 1980 and shown on the inventory maps located at the BLM Kanab Field Office.⁶
 - Cross-country travel within the WSAs is prohibited.⁶
 - These limitations apply to all motorized vehicle use with the exception of law enforcement and emergency personnel or administrative uses authorized by BLM.⁶
 - The travel limitation will remain in effect until the threats to WSA impairment are eliminated or permanent OHV designations are effected through land use planning as identified in 43 CFR 8341.2(a).⁶
- OHV travel restrictions and seasonal closure to motorized use in the Hog Canyon and Trail Canyon areas.⁷
 - OHV cross-country travel in this area is prohibited in Hog Canyon and Trail Canyon.⁷
 - Trail Canyon is closed to OHV use.⁷
 - Travel by all motorized vehicles in Hog Canyon will be limited to specific identified routes (a map showing these routes is available in the BLM Kanab Field Office).⁷
 - An area on the north side of Pugh Canyon is closed annually to motorized use between February 1 and August 31 (to protect the reproductive success of a breeding pair of raptors).⁷
 - This restriction and seasonal closure will remain in effect until the considerable adverse effects giving rise to the restriction and seasonal closure are eliminated and measures are implemented to prevent recurrence of these adverse effects.⁷
- Coordinate with Utah State Department of Parks and Recreation in future efforts on their part to develop an intensive off-road vehicle use area as per the Escalante Petrified Forest State Park Development Plan.¹
- Acquire legal access only on the roads and trails which are most in demand for public access according to the following priority lists:⁴
 - North Fork Virgin River⁴
 - Orderville Gulch⁴
 - Cogswell Point Road⁴
 - Branch of Cogswell Point Road⁴

- Allow the road in 1/4 mile Township 40 S, Range 5 W, Section 15 to be developed and upgraded according to the ROW application. Incorporate erosion control stipulations into the ROW grant (from watershed decision).⁴
- Develop an off-road vehicle Management Plan.⁵

Lands and Realty Management

Goals/Objectives

- Increase Utah State Park Department tenure at Escalante Petrified Forest State Park by disposal of 799.75 acres now encompassed in lease U-23384 following modification of or compliance with the approved plan of development.¹
- Reduce outstanding Utah State indemnity selections by disposal of 10.03 acres.¹
- Make public lands available for small scale ROWs serving local transportation and utility needs. The suitability of applied for ROWs will be judged on a case-by-case basis. Use of authority for the termination of ROWs will be used as needed to assure compliance with the conditions and stipulations of ROW grants.^{3,4}
- Make public lands available as ROWs for the development of major industrial, interstate transportation and utility systems, as well as associated with the development of energy resources within the decision area. To the extent practical, these systems will be confined to clearly designated corridors with the intent of preventing the proliferation of such developments throughout the decision area.^{3,4}
 - The systems to be so confined include electric transmission systems over 69 kV, all Class A roads, all railroads, and all special systems such as coal slurry pipelines.³
- Ensure that the administrative jurisdiction of all public lands within the planning unit conforms to appropriate statutes.^{3,4}
- Provide more effective public land management and to improve land use, productivity and utility through providing for the authorization of legitimate uses of public lands by processing use authorization such as ROWs, leases, permits, and State land selections in response to demonstrated public needs.⁵

Decisions

- Pass title to 799.75 acres of public land to the Utah State Park Department under the R&PP Act by approving the patent application covering the described area after full compliance with the approved development plan for all lands involved.¹
- Make 10.03 acres of public land within the Boulder Town site available to the State of Utah.¹
- Make public land in Township 43 S, Range 6 W, Sec. 22 available for use as a communications site. The Kanab Lions Club television repeater (application U-38334) and the Kane County Sheriffs Department radio repeater will be included in this site. Additional communications facilities serving the Kanab area will be directed to this site as well (one-fourth acre). Require painting or other necessary rehabilitation in authorizing existing facilities. In considering applications for future facilities, require a contrast rating for each proposal and only grant the proposal where it meets the standards of VRM Class II or where appropriate stipulations can be imposed to maintain VRM Class II standards.³
- Amend the City of Fredonia's ROW grant, SL-062734, to include those portions of the city's system which are outside of the existing survey play. Eliminate grazing in the area. Work with the States of Arizona and Utah as well as EPA and the City of Fredonia to upgrade facilities and development of additional water, possibly through deep wells to supply community needs. Establish a five-year time period for the city to bring its facilities to standards required by the grant of ROWs.³

- Evaluate each proposal to construct utilities in the vicinity of U.S. Highway 89 from Mt. Carmel Junction south to Kanab and from Kanab east to the planning unit boundary, or elsewhere in the planning unit, on the basis of constraints imposed as a result of other resource decisions in this MFP and on resource information. Prepare an EA of impacts on a case-by-case basis using resource information to arrive at a decision as to whether any proposal will be granted or how it should be modified. Coordinate proposals for ROWs with the Kaiparowits Transportation Study completed by Environmental Research and Technology, Inc. for BLM in 1980.³
- Establish Utility Corridor 2 (UC-2) along the route covered by ROW application U-31542. This corridor will be approximately 27 miles long and one-half mile wide covering approximately 8,000 acres of public lands. All types of utility and transportation systems will be allowed within this corridor.³
- A detailed environmental report or environmental statement will be prepared on each future application to construct utilities. This analysis, together with constraints imposed as a result of other resource decisions in this MFP will serve as the basis for utility ROW decisions as they arise.³
- Review of withdrawals under Section 204(l) of FLPMA will be given to the areas of land withdrawn by the Bureau of Reclamation in support of the Marble Canyon Project (U-024909, PLO-3469, PLO-4277). These lands will be reviewed and subsequent recommendations made to the Secretary of Interior prior to July 1, 1980.³
- Request that the State Director cancel the R&PP classifications on 2,271.45 acres of public land in Township 42 S, range 6 W, and Township 43S, range 6W.³
- Request the cancellation of the Classification and Multiple Use Act of 1964 classifications segregating the following lands from all forms of appropriation including mineral location:³
 - Township 42 S, Range 7 W, Sec. 4, Lots 5, 6, 11 & 12. (140.05 acres)³
 - Township 43 S, Range 7 W, Sec. 7, NE¹/₄. (160 acres)³
 - Township 43 S, Range 7 W, Sec. 14, SE¹/₄ (160 acres)³
 - Township 43 S, Range 7 W, Sec. 17, NW¹/₄, SE¹/₄SE¹/₄. (200.00 acres)³
 - Township 43 S, Range 8 W, Sec. 13, NW¹/₄NW¹/₄. (40 acres)³
 - Township 43 S, Range 8 W, Sec. 14, NE¹/₄NE¹/₄. (40 acres)³
 - The values for which these lands were classified will be reviewed and if they still warrant protection, specific protective withdrawals under Section 203 of FLPMA will be obtained prior to the cancellation of the existing classifications.³
- Revoke the Public Water Reserve withdrawal on 40 acres of public lands in Township 43 S, Range 8 W Sec. 18, NE¹/₄SE¹/₄. Approve only after there is absolute assurance that this water does not exist.³
- Protect the relict characteristics and values on Diana's Throne (90 acres) by segregating it from all land disposals.³
- Make public lands in Township 40 S, Range 4.5 W, SLBM, Sections 19, 20, 21, and 33 available to Kane County for use as a road ROW with special stipulations, as identified in an EAR, to protect watershed values.⁴
- Approve the granting of a ROW application, filed by Utah International Corporation for well sites, water pipelines, electric power lines and industrial plant sites in Township 39 S, Range 5 W, and Township 40 S, Range 5 W. Approval of this application is subject to the completion and approval of all environmental analysis involved in the proposed development. All needed ES effort should be completed and approved and stipulations from these ESs should be included in any grant in order to protect resource values.⁴
- Establish a utility corridor along the route ROW application U-31542, filed by the Black Mesa Pipeline Company through upper Kanab Creek. This corridor will be half-mile wide with an overall length of approximately 6 miles, covering approximately 1,500 acres of public lands. All types of utility and transportation systems will be allowed within this corridor.⁴

- Approve the granting of Title V, FLPMA ROWs to Kane County to cover major road upgrading and realignment efforts required in conjunction with the development of the Alton coal fields. This recommendation covers only existing county roads. New roads, not covered by the ROWs granted to Utah International as part of its coal lease development program, which the County desires to obtain, must be applied for as new ROWs. Special stipulations will be included in any ROW grant to protect resource values and mitigate the impacts on recreation, VRM, watershed.⁴
- Approve the revocation of Coal Classification Withdrawal U-1 in Township 40 S, Range 4 W.⁴
- Encourage, to the maximum extent practicable, the location of new major ROWs within designated corridors.⁵
- Designate a one-mile wide corridor for power transmission lines. This corridor was identified and analyzed for the Intermountain Power Project (IPP) (DOI, BLM. IPP Volumes II and III Project Alternatives, Appendices and References, 1979.) under the title of IPP Utah System Preferred Route. This corridor was analyzed for establishment of power transmission lines and is designated for that purpose. Any use authorization other than for electrical transmission lines will require a separate analysis.⁵
- A regional or statewide study and analysis will be made of corridor needs and additional corridor designations made based on that analysis. Any additional corridor designations, identified as a result of this study, would require a planning amendment.⁵
- Attach stipulations identified in IPP EIS (1979) to ROWs for electrical transmission lines located within corridors on lands administered by BLM.⁵
- Process applications for use authorizations such as ROWs, leases, and permits on a case-by-case basis.⁵
- Provide timely response to applications for use authorizations and State selections in accordance with current procedures and policies.⁵
- Public lands in order to be considered for any form of land tenure adjustment including but not limited to exchanges, in lieu selections, desert land entries, R&PP etc. (except FLPMA 203 sales) must meet one or more of the following criteria:^{2, 3, 4, 5}
 - is in the public interest and accommodates the needs of state, local, or private entities, including needs for the economy, community growth and expansion and are in accordance with other land use goals and objectives and RMP/MFP planning decisions;^{2, 3, 4, 5}
 - results in net gain of important and manageable resource values on public lands such as crucial wildlife habitat, significant cultural sites, high value recreation areas, high quality riparian areas, live water, T&E species habitat, or areas key to maintenance of productive ecosystems;^{2, 3, 4, 5}
 - ensures the accessibility of public lands in areas where access is needed and cannot otherwise be obtained;^{2, 3, 4, 5}
 - is essential to allow effective management of public lands in areas where consolidation of ownership is necessary to meet resource management objectives;^{2, 3, 4, 5}
 - results in the acquisition of lands which serve a national priority as identified in national policy directives.^{2, 3, 4, 5}
- In addition to the above criteria, all future land disposal actions will require a site-specific environmental analysis in accordance with NEPA when an actual land tenure adjustment action is proposed. A subsequent analysis may reveal resource conditions that could not be mitigated to the satisfaction of the authorized officer and may therefore preclude disposal.^{2, 3, 4, 5}
- All future land tenure adjustments must meet one or more of the above land tenure adjustment criteria as well as be in conformance with other goals and objectives in the subject plan, some of which could preclude land tenure adjustment. All land tenure adjustment would be subject to valid and existing rights as determined by the authorized officer.^{2, 3, 4, 5}

Minerals and Energy Development Management

Goals/Objectives

- Provide sufficient salable and free-use minerals (i.e. sand and gravel) to meet local demand through the case-by-case issuance of free-use permits and mineral material sale contracts.^{1, 2, 3, 4, 5}
- Provide sufficient coal to meet regional and national demands consistent with departmental policy being developed in response to NRDC vs. Hughes.⁴
- Provide maximum leasing opportunity for oil, gas, and geothermal exploration and development by utilizing the least restrictive leasing categories necessary to adequately protect sensitive resources.⁵
- Make lands available for further coal leasing consideration as determined by the coal lease screening process which involves (1) Call for coal resource information (2) the application of the coal unsuitability criteria (43 CFR 3461 and 3420.1-4(e)(2) (3) multiple land use analysis (consideration of locally important or unique resource values (43 CFR 3420.1-4(e)(3); and (4) surface owner consultation (43 CFR 3420.1-4(e)(4)).⁵
- Prevent unnecessary and undue degradation on lands open for locatable mineral exploration and development.⁵

Decisions

- Keep those areas presently open to oil and gas leasing under the Mineral Leasing Act open.³
- Manage oil and gas leasing according to oil and gas leasing categories on Map 16:^{1, 2, 3, 4, 5}
 - Open to leasing with standard stipulations: 499,500 acres
 - Open to leasing with minor constraints: 13,700 acres
 - Open to leasing with major constraints: 16,900 acres
 - Closed to leasing: 24,300 acres
- These oil and gas leasing categories and stipulations do not apply to geophysical exploration which is administered under the Notice of Intent Process (43 CFR 3045).⁵
- The unit is open to exploration and leasing with provisions to protect critical environmental values and will remain open unless some action is taken to the contrary.⁴
- Put no surface occupancy stipulation on oil and gas leasing for 1,280 acres in the Water Canyon/South Fork Indian Canyon area.³
- When the Glen Canyon NRA Management Plan is approved, BLM will recommend that all areas within the recreation area designated for resource utilization (i.e., non-wilderness) be open to leasing for oil and gas and, when appropriate regulations are promulgated, those deposits of oil impregnated sandstone within non-wilderness areas also be open to leasing and possible development.²
- Allow disposal of sand and gravel through free-use permits and material sale contracts to meet legitimate demand.^{1, 2, 3, 4, 5}
- Require stipulations in any sale or permit for disposal of sand and gravel to protect the following features:^{1, 2, 3, 4}
 - Riparian area (perennial stream bottoms and banks)¹
 - VRM class II areas¹
 - Floodplains¹
 - Allow recovery of sand and gravel from riparian areas where an environmental analysis on a site-by-site basis can identify measures that will mitigate impacts to the riparian area or where it can be shown natural forces will satisfactorily heal the scars of removal in a timely manner.²

- Authorize sand and gravel extraction in other areas only with stipulations, developed through an EAR, that can mitigate adverse effects on watershed, wildlife, and visual resource values, as well as any other resource values that need protection.²
- Make gravel available in areas identified as frail watershed only if appropriate stipulations can effectively mitigate any adverse effects on the watershed resource.³
- Do not extract sand and gravel from frail soil areas, stream treatment areas, or areas recommended for improvement of erosion conditions unless stipulations can be incorporated into a mining plan which would mitigate the impacts.⁴
- Permit extraction in areas of T&E plants where an EA indicates extraction can proceed with measures to mitigate the impacts to plants.²
- A visual contrast rating will be made on a case by case basis for each extraction site. When areas are mined out, they will be reclaimed and revegetated so that the sites will support livestock and wildlife, meet the appropriate visual class, and provide for watershed protection.⁴
- Sand and gravel removal would be excluded from the following areas:³
 - Crescent Butte, Shinarump Cliffs and Vermilion Cliffs recreation sites.³
 - Do not extract sand and gravel from the 40 acre ponderosa pine area.⁴
- Allow permits for removal or sale of burnt shale aggregate to meet legitimate demand, except as follows:⁴
 - Do not extract burnt shale aggregate from areas recommended for improvement of erosion conditions unless stipulations can be incorporated into a mining plan which would not degrade the erosion conditions.⁴
 - A visual contrast rating will be made on a case by case basis for each extraction site. When areas are mined out, they will be reclaimed and revegetated so that the sites will support livestock and wildlife, meet the appropriate visual class and provide for watershed protection.⁴
- All areas are presently open for leasable coal opportunities will remain open unless some action is taken to the contrary.⁴
- Determine that the area within the Alton/Kanab Known Recoverable Coal Resource Area is acceptable for further consideration for leasing except as follows:²
 - Do not further consider leasing those areas where there are interactions with wildlife and forestry unless it is determined that mining can take place and still protect these values.²
 - Where the coal unsuitability criteria have been identified (VRM Class II), do not further consider the area for leasing unless it is determined that mining can take place and still meet the VRM Class II requirements.²
- Determine that this area is acceptable for further consideration for coal leasing (where presently unleased) and development (where presently leased) except as follows:⁴
 - On leased lands, the lessee's mining and reclamation, plan must consider all possible impacts on livestock and wildlife forage and visual resources and place and design surface structures and reclaim the area when mining is terminated so as to mitigate the identified impacts as much as possible.⁴
 - On leased lands where unsuitability criteria have been identified and it has been determined that the criteria can legally be applied mining and reclamation plans will be designed so that these areas are not disturbed.⁴
 - Do not further consider unleased lands for leasing unless future mining plans can be developed to protect the ponderosa pine area; provide for the protection of wildlife habitat and livestock grazing; provide for watershed protection and meet visual classes as much as is practical.⁴
 - On unleased lands where coal unsuitability criteria have been identified, do not further consider the area for leasing unless it is determined that mining will not adversely affect the value which is to be protected.⁴

- Reject the sanitary landfill site application and have applicant substitute for a site where there would be no surface coal mining.⁴
- On leased lands, the lessee's mining and reclamation plan must consider all possible losses of AUMs and destruction of range improvements and treatments caused by surface mining and mine and reclaim so as to rectify all identified losses as much as possible.⁴
- On leased lands, the lessee's mining and reclamation plan must consider all frail watershed and stream channel treatment areas which will be surface mined and the lessee must mine and reclaim them so as to minimize or eliminate the adverse impacts.⁴
- On leased lands, the lessee must, through a mining and reclamation plan, maintain existing water quality and prevent excessive erosion which may be caused by surface mining.⁴
- On leased lands, the lessee's mining and reclamation plan must consider all possible losses of wildlife habitat and riparian areas caused by surface mining and mine and reclaim them so as to rectify all identified losses as much as possible.⁴
- On leased lands, the lessee will reclaim mined-out areas so that they meet the appropriate visual class after reclamation.⁴
- For leased lands where coal unsuitability criteria have been identified and if it is determined that the criteria can legally be applied, don't allow mining in these areas unless the lessee can show in an approved mining plan that mining will not adversely affect the value which is to be protected.⁴
- On unleased lands where coal unsuitability criteria have been identified, do not further consider the area for leasing unless it is determined that mining will not adversely affect the value which is to be protected.⁴
- The Potential Coal Development Areas within the Alton and Johns Valley Coal Fields are suitable for further leasing consideration as described below:⁵
 - Based on the coal lease screening process, the following lands will be considered suitable for further leasing consideration for underground and surface mining: Alton Coal Field - 837 acres, and Johns Valley Coal Field - 12,506 acres. An additional 3,900 acres, identified under criteria numbers 2, 3, 9, 11, 12, and 15 will be considered suitable for further leasing consideration for underground mining, but will be considered unsuitable for surface mining. It should be noted that application of Unsuitability Criterion 16 (Flood Plains) was not completed, and Criterion 19 (Alluvial Valley Floors) was not applied to any of the potential coal areas. These criteria will be applied prior to any leasing (see c. below) and could result in additional acreages considered unsuitable.⁵
 - Apply coal unsuitability criteria 16 and 19 (Floodplains and Alluvial Valley Floors, respectively) prior to leasing (43 CFR 3461.4-l).⁵
- Consider petrified wood exploration and sales anywhere within the known and inferred deposit areas to meet demand except two identified recreation sites (i.e. Shinarump Cliffs Ruin and potential Red Canyon Picnic Site).³
- Protect the relict characteristics and values on Diana's Throne (90 acres) by segregating it from mineral entry.³
- The segregation from mineral entry in the Sand Spring area should be maintained and mineral leasing operations prohibited.³
- Prevent undue and unnecessary degradation on lands open for locatable mineral exploration and development.⁵
- This area is presently open to leasable geothermal steam exploration and will remain so until some action is taken to the contrary.⁴

SPECIAL DESIGNATIONS

Areas of Critical Environmental Concern Management

Goals/Objectives

Management goals or objectives were not specifically identified in any of the existing land use plans for Areas of Critical Environmental Concern.

Decisions

- Designate 225 acres of public land within the Water Canyon/South Fork Indian Canyon area as an ACEC. The area would be administered to give primary emphasis to scenic, recreational, botanical, and biological values. Designation of the area as an ACEC would mean that any proposals within the area should be in harmony with these values. The management for this area will be:³
 - Continue the present off-road vehicle restrictions (limiting existing roads and trails).³
 - All future oil and gas leases will have a no surface occupancy stipulation.³
 - The area will be retained in public ownership.³
 - Retain the existing water reserve to protect the hanging garden/relic area habitat.³
 - Withdraw the area from mineral entry.³
 - Complete an activity plan to provide a more detailed management strategy for the area.³
 - Until an activity plan is developed, fire suppression will be determined on a case-by-case basis as an interim management tool.³
 - BLM will not consider nor recommend any change in air quality classification as part of the ACEC designation.³

National Trails Management

National Trails management was not addressed in the Escalante, Paria, Vermilion, or Zion MFPs, or in Cedar-Beaver-Garfield-Antimony RMP.

Wild and Scenic Rivers Management

WSR management was not addressed in the Escalante, Paria, Vermilion, or Zion MFPs, or Cedar-Beaver-Garfield-Antimony RMP.

Wilderness Management

Wilderness management was not specifically addressed in the Escalante, Paria, Vermilion, or Zion MFPs, or the Cedar-Beaver-Garfield-Antimony RMP.

Wilderness Study Area Management

WSA management was not addressed in the Escalante, Paria, or Zion MFPs, or the Cedar-Beaver-Garfield-Antimony RMP. As directed by BLM policy, WSAs are managed according to Handbook 8550, Interim Management Policy for Lands Under Wilderness Review to preserve their wilderness values until Congress designates them wilderness or releases them from further wilderness consideration.

Vermilion MFP Amendment, 2000

Goals/Objectives

- Provide a safe and enjoyable recreation experience for all visitors to the Coral Pink Sand Dunes/Moquith Mountain area while managing and protecting natural resources.³

Decisions

- Management of the Moquith Mountain WSA will continue as directed by the Interim Management Policy for Lands Under Wilderness Review.³
- Approximately 14,100 acres of the WSA (95 percent), including 790 acres of the sand dunes, would be closed to OHV use.³
- Approximately 730 acres of sand dunes (including approximately 15 acres in the Sand Wash area) would remain open to OHV use.³
- The ten miles of routes on Moquith Mountain (approximately 20 acres), identified in the July 13, 1998 Federal Register Notice, would continue to be open to vehicle use.³
- The WSA would be monitored on a regular basis for potential impairment of wilderness values. If monitoring indicates that impairment may be occurring, then management actions would be implemented to protect wilderness values. Potential actions could include restricting the number of visitors or expanding the OHV closure.³

Other Special Designations Management

No other areas were designated for special management in the Escalante, Paria, Vermilion, or Zion MFPs or the Cedar-Beaver-Garfield-Antimony RMP.

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CHAPTER 4 – MANAGEMENT ADEQUACY AND OPPORTUNITIES

This chapter analyzes the ability of current management direction to achieve desired conditions and address resource demands. Based on the current condition and trends of the resources present in the decision area and the current demands on those resources, an analysis is provided for each resource and resource use. Additionally, options for changing existing management are provided in cases where current management decisions do not adequately respond to current issues, changes in circumstances, or new information.

Analyzing the adequacy of current management direction and identifying management opportunities is a process of considering changes in management to respond to information gathered in the area profile (Chapter 2) and issues and concerns elevated through scoping. The information provided in this chapter will serve as a starting point for alternative formulation by providing a list of possible management opportunities, which later will be refined into a framework of comprehensive alternatives.

RESOURCES

Air Quality

The Escalante, Paria, Vermilion, and Zion MFPs did not specifically address ambient air quality or the air quality-related values of visibility and atmospheric deposition. The 1986 CBGA-RMP management action has resulted in maintaining adequate air quality.

The Kanab RMP will need to incorporate objectives for air quality and visibility, describe the current air resource conditions within the decision area, provide actions or limitations to manage air resources and visibility, and provide for collaboration on regional issues with local, State, and Federal agencies. The analysis of impacts to air quality as a result of activities on BLM-administered public lands should include recreational use of vehicles and energy development and construction activities.

Soil Resources

The CBGA-RMP did not specifically address soil resource management. The management actions from the Escalante, Paria, Vermilion, and Zion MFPs have resulted in maintaining soil resources.

The Kanab RMP will need to address protection of soils to reflect the expected future uses and conditions of BLM-administered lands, and some standards and objectives may need to be clarified or changed. Stipulations currently in place to reduce salinity or erosion impacts during some resource uses could be expanded to include all surface disturbing activities. Specific emphasis could be placed on managing surface disturbing actions on identified areas of fragile soils and areas susceptible to erosion.

Uses on fragile soils may be limited by severe erosion hazards. Landsliding and other erosive phenomena may undercut structures, hinder construction, destroy road beds, and even pose safety hazards. Fragile soils along with possible resulting use limitations would be identified throughout the decision area on a case by case basis.

Water Resources

Water resources management was addressed in the previous land use plans. The management actions from the Escalante MFP, Paria MFP, Vermilion MFP, Zion MFP, and the CBGA-RMP have resulted in maintaining water resources, although there may be site-specific water quality concerns. This RMP process could incorporate new science and technologies through management actions such as vegetation treatments implemented to improve watershed health and improve water quantity and quality. In addition, the Upper Sevier Watershed Management Plan addresses cooperative watershed management and water quality on private, state and Federal lands within the Upper Sevier Watershed. This RMP process could incorporate the solutions and priorities identified in that plan. Similar cooperative efforts are underway in the Virgin River Watershed.

The Kanab RMP could also discuss water quality issues, determine where current resource uses may be contributing to water quality problems, include best management practices for riparian/wetland areas, and review the State's 303(d) list for impaired river and streams and determine if BLM-authorized activities contribute to the impairment. In addition to the State's 303(d) list, RMP decisions could consider actions that address salinity concerns in the Colorado River. Specifically, the RMP could include measures that reduce total dissolved solid loading into the Colorado River and its tributaries. Management decisions could include limiting or restricting surface disturbing activities in riparian areas, near impaired rivers and streams, in floodplains, and in watersheds used for public drinking water supply. The analysis of impacts to water quality and hydrologic processes from activities on public land should include construction activities, use of recreational vehicles, mineral development, and surface disturbing activities.

The RMP could also facilitate coordination with other agencies in managing water resources. Through working with local agencies, the RMP could address flood planning. The BLM will coordinate with the Utah Division of Water Quality and the Environmental Protection Agency to ensure the RMP complies with the Clean Water Act.

Vegetation

Vegetation management was not identified as a separate resource program in the previous RMPs. Management prescriptions for vegetation resources could be developed as part of the RMP revision effort, and could be organized by the major vegetation types (e.g., shrublands, forests and woodlands, and riparian and wetland communities). Use of vegetation products (e.g., commercial seed collection, live plant collection) is not addressed in existing land use plans.

General management opportunities for the revised RMP could include identification of desired outcomes for vegetation resources (i.e., Desired Plant Communities [DPC]), including the desired mix of vegetation types, structural stages, and landscape and riparian functions. The revised RMP could also designate priority plant species, including Special Status Species, and plant species recognized as significant for at least one factor. Once the species are determined, management actions could be identified to achieve desired vegetative conditions. This RMP process could also identify areas available or not available for use of vegetation products.

The Utah Standards for Healthy Rangelands initiates a 10-year monitoring and evaluation cycle to assess the condition of upland and riparian habitats, determine if management changes are needed to achieve resource objectives, and adjust management prescriptions as necessary. As shown in

Table 5. Decision Area Riparian Condition, 60.5 percent of evaluated riparian/wetlands were rated as PFC, while 37 percent are functioning at risk and 1.5 percent are not functioning. Additionally, 51 percent of riparian-wetland mileage exhibit PFC, 40 percent are functioning at risk, and 8.5 percent of evaluated linear riparian-wetland areas are not functioning. The ecologic condition has been assessed on several upland sites. The ecologic assessments are based on site-specific indicators of soil/site stability, biotic integrity, and hydrologic function. On upland sites where functional status has been determined, approximately 96 percent of sites are functioning properly. It should be noted, though, that nearly 42 percent of assessed sites have not had functional status determined. However, the trend of upland sites have been determined on approximately 88 percent of assessed sites. Approximately 12 percent of assessed sites are trending downward or static to downward, while more than 76 percent of assessed sites are either static (44 percent), static to upward (16 percent), or upward (16 percent) trending. Upland trends have not been completed on approximately 11 percent of sites. Implementation of the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management has resulted in management changes that have allowed BLM to improve or maintain upland and riparian systems in a healthy state. As interdisciplinary teams continue to assess upland and riparian systems and identify problems, BLM will make necessary management changes at the site-specific level.

Management opportunities for the revised RMP could include changing management direction to focus on identifying DPC and PFC objectives, prioritizing streams that require intensive management, and identifying management actions needed to achieve desired conditions.

Special Status Species (Threatened, Endangered, and Sensitive)

Most of the management decisions in the MFPs/RMP address the need to improve habitat and protect threatened, endangered, candidate and proposed animal species from disruptive activities within the decision area. Implementing the existing land use plans, as well as subsequent conservation agreements and recovery plans, has resulted in special management for several special status plant and animal species. Since completion of the existing plans, several plant and animal species have been identified or designated as special status. Existing land use plan decisions do not address these species. Additionally, research and monitoring have increased information concerning the distribution and habitat requirements of various species. The revised RMP would incorporate this information for both listed and non-listed special status plant and animal species.

In 2000 the Vermillion MFP was amended to include decisions to protect special status species in light of increases in recreation use at the Coral Pink Sand Dunes. The effectiveness of this management change would be reviewed during this process, and management would be adjusted as necessary. For other special status species there is an opportunity to manage for conservation and recovery. Decisions would be implemented to lead to recovery for listed species and management of non-listed species so that the need for listing as threatened or endangered does not arise.

Fish and Wildlife

Most of the management decisions taken from the MFPs/RMP regarding fish and wildlife address the need to improve habitat and meet water needs for wildlife species. Management opportunities for the revised RMP could include identifying desired habitat conditions and population objectives for major habitat types that support a wide variety of wildlife species. Priority species, including populations of fish or wildlife species, and habitats could also be designated. Once priority species and objectives are determined, actions and area wide use restrictions needed to achieve desired population and habitat conditions could be identified.

There could be opportunities for improving the habitat condition and trend on all poor and fair condition desert shrub, sagebrush, and grasslands by vegetation treatments or prescription grazing management. Maintenance of all good condition deer shrub, sagebrush, riparian habitat, and grassland areas should also be considered. Additionally, opportunities to protect ponderosa pine trees within the decision area as important wildlife habitat would benefit big and small game species as well as nongame species.

Previous management plans for the area identified the need to eliminate conflicts between mule deer and elk. There is potential to consider changes in livestock grazing management to address forage conflicts where applicable on these habitats. There is also an opportunity to address water needs (especially throughout spring and fall) for pronghorn, desert bighorn sheep, Gambel's quail, and chukar. The previous MFPs and RMP were inadequate in addressing some concerns gathered during scoping, such as retaining habitat connectivity. The issue of developing criteria for potential reintroductions of fish and wildlife species would be managed by agencies such as UDWR and USFWS in coordination with BLM.

There are opportunities to protect greater sage-grouse breeding, nesting, brood-rearing and wintering habitat, migratory bird nesting habitat, bald eagle feeding and concentration areas, peregrine falcon use areas, and other raptor nest sites on public lands from all types of undue intrusions (e.g., OHV use, mineral operations, and land treatments). The existing land use plans do not include management for migratory bird habitat. The RMP revision will integrate direction from EO 13186. The RMP could accomplish this by integrating information concerning Utah Partners in Flight (PIF) priority species and FWS Birds of Conservation Concern. The RMP should protect important migratory bird habitat areas (e.g. areas of high concentration nesting and/or high species diversity) in addition to raptor areas. The RMP should identify these important areas for both raptors and non-raptor avian species, and outline some special protective measures for these areas.

Wildland Fire Ecology

The Utah Land Use Plan Amendment for Fire and Fuels Management was completed in mid-2005, amending the existing land use plans with updated wildland fire ecology management decisions. These decisions adequately address wildland fire management, identifying landscape level goals and actions needed to achieve them. This planning effort should carry these decisions forward unchanged, as they were completed with up-to-date information and were associated with an appropriate-level NEPA document.

Cultural Resources

When surface disturbing activities (such as mineral development, range improvements, recreation site development, ROWs, etc.) threaten cultural resources, the cultural resources program provides support by evaluating cultural resource sites through Section 106 consultation. Relying on the reactive nature of Section 106 preserves resources from direct effects, but also results in the decline of cultural sites due to natural deterioration, decay and incidental damage and vandalism. Policy changes have also been made in the BLM cultural resource management program since the earlier MFP/RMP efforts. Management guidance in BLM Manual 8130 Section 13 is not in the existing MFPs/RMP. Additionally, cultural resource sites are not allocated to use categories as required in BLM Manual 8110, Section 4. The existing land use plans address a portion of the required components, but are silent on several other key policy requirements such as the Native American Graves Protection and Repatriation Act, the 1992 amendments to NHPA, and EO 13007, and do not have specific resource management goals and actions that address these directives.

The RMP revision process could provide for the development of a proactive cultural resources management framework that incorporates changes in BLM policy and law. This planning effort can

provide guidance for the cultural resources program and a framework for the inventories by allocating cultural resources to use categories and establishing criteria for management of sites yet to be identified. Use allocations could also provide a framework for priority cultural resource areas or site types. This could allow managers to “know in advance how to respond to conflicts that arise between specific cultural resources and other land uses” (BLM-M-8110, Sec. 4).

Paleontological Resources

Existing management inadequately addresses the study, use, and protection of paleontological resources. While there are some decisions that address the management of petrified wood, these are directed at consumptive use. The amount of petrified wood allowed to be collected is addressed in BLM mineral regulations. Additionally, many of the areas noted in the existing land use plans are not in the decision area. This planning effort will need to address the management of paleontological resources, including their scientific, education, recreation and consumptive use values. This could be accomplished through programmatic decisions providing direction to the paleontology program, as well as land use stipulations or restrictions to protect these values.

Visual Resources

The manner in which the existing land use plans addressed VRM, in designation and management of visual resource management classes, is not in compliance with current BLM policy direction for utilization and implementation of VRM. The way VRM was approached in the previous plans is an outdated approach and should not be replicated in this planning effort.

Since the existing land use plans were completed, a new visual resources inventory has been undertaken. Scenic Quality Rating Units and Classifications, Visual Sensitivity Rating Units and Classifications, and Distance Zones were developed as part of this inventory. The data compiled from this inventory process should act as the starting point for establishing VRM classes in this RMP effort. In addition, the policy for VRM designations in WSAs has changed since the existing plans were completed. The new RMP should designate WSAs as VRM Class I in accordance with the current policy.

Opportunities for VRM revolve around the integration of this program with the others resources and resource uses to be addressed in the management alternatives. Opportunities for management integration between VRM and other resources and uses could include the following:

- Vegetation Manipulation (Fire, mechanical treatment, chemical treatment, etc.)
- Recreation (especially OHV use)
- Oil and gas development
- Mineral extraction (establishment of new gravel pits will likely be considered as development increases and with limitation of extraction on adjacent lands, as well as coal and other mineral extraction)
- Utility corridors
- Transportation networks

Other opportunities that exist are special designations such as ACECs (Visual ACECs to preserve the scenic viewshed could be considered in the EIS alternatives) or managing the viewsheds of existing or potential scenic byways and backways.

Wilderness Characteristics

In April 2003, the U.S. district court, District of Utah, Central District, approved an agreement negotiated to settle a lawsuit originally brought in 1996 by the State of Utah, Utah School and Institutional Trust Land Administration, and the Utah Association of Counties, challenging BLM's authority to conduct new wilderness inventories. The policies stemming from the settlement stipulated that BLM's authority to designate new WSAs expired no later than October 21, 1993. Although Congress ended BLM's authority to designate WSAs in 1993, BLM retains its Section 201 FLPMA authority to inventory resources or other values, including areas with wilderness characteristics such as naturalness, or those that offer solitude and are conducive to primitive, unconfined recreation.

BLM's policy on considering wilderness characteristics in land use plans was further clarified in IM 2003-275, Change 1. According to that memorandum, lands with wilderness characteristics may be managed to protect and/or preserve some or all of those characteristics. This may include protecting certain lands in their natural condition and/or providing opportunities for solitude, or primitive and unconfined types of recreation. BLM can make a variety of land use plan decisions to protect wilderness characteristics, such as establishing VRM class objectives to guide the placement of roads, trails, and other facilities; establishing conditions of use to be attached to permits, leases, and other authorizations to achieve the desired level of resource protection; and designating lands as open, closed, or limited to OHV use in order to achieve a desired visitor experience. Through the RMP planning process, BLM will consider all available information to determine the appropriate mix of resource use and protection that best serves the FLPMA multiple use mandate.

RESOURCE USES

Forestry and Woodland Products

Forests and woodlands within the decision area have received increasing attention primarily due to changing ecological site conditions and human activities. Many of these ecological changes result from drought, past fire suppression strategies modifying the natural fire regime and woodland encroachment into other vegetation communities. Managing forests and woodlands as mostly open to harvest does not provide an adequate solution for long-term ecological problems such as woodland encroachment into adjacent shrublands. Based on existing demand for harvest, forest and woodland resources provide ample opportunities for harvest of woodland products (i.e. post, fuelwood, Christmas trees). Current land use plans do not address other uses of forest and woodland products such as biomass harvest. This RMP could identify areas available or not available for such use.

Management direction for forest and woodland resources could be changed to focus on identifying DPC objectives, prioritizing areas that require intensive management, and identifying management actions needed to achieve desired conditions. For example, the revised RMP could identify areas at risk from insects, disease, and conversion of forest or other community types that require revised management actions and land use restrictions.

Livestock Grazing

Over 85 percent of sites with range assessments completed are either static or improving in their functional status. Likewise, of the sites where functional status has been determined (224 sites out of 385 sites), over 96 percent of the sites are functioning properly. This figure, however, does not account for the condition of over 40 percent of assessed sites where no functional status has been determined. Existing plans do not address the Standards for Healthy Rangelands and Guidelines for Livestock Grazing

Management. The existing land use plans preceded the changes in BLM regulations regarding the Standards and Guidelines. The new plan would incorporate the Standards as they apply to all resources and uses and the Guidelines for grazing management as they apply to livestock grazing in the analysis area.

Land ownership and designation in the area has changed substantially (such as establishment of GSENM and the 1998 land exchange with the State of Utah) since the previous land use plans were developed. Minor changes have occurred in the grazing program that need to be updated in the context of land ownership and the existing condition of the range. This planning process offers an opportunity to review and update lands available or unavailable for livestock grazing, as referred to in 43 CFR 4130.2.

The issue of forage reallocation has been raised in BLM planning processes throughout the west. Agencies and organizations have sought such actions in the past and will likely continue in the future. Existing plans hint at allocation of forage to big game, but do not address this issue completely. This planning process may identify wildlife forage allocations and/or identify wildlife objectives which may require livestock use adjustments on specific allotments to accomplish. This process could also provide for temporary (outside normal season of use) livestock grazing on these allotments to achieve desired vegetation, fuel conditions, or other management objectives.

Other important issues have been raised as a result of changes in land use activities and areas. Recreation activities and the number of users have increased since the last land use plans were completed. Conflict between livestock grazing and other resources and uses could exist, and can be addressed through this planning process. These changes often require more intensive management of livestock. For example, this planning effort could identify trailing areas and standard stipulations required for permits to trail livestock. The general issue of range improvements and more specifically access and maintenance to improvements in wilderness areas, WSAs, and lands with wilderness characteristics could be addressed. Most of these areas have been identified and/or designated since the last planning effort.

Finally, not all management actions from previous land use plans have been implemented. Some of these actions may still be appropriate. The new plan should carry forward those items from the old plan that are still necessary to provide for livestock grazing while meeting other resource objectives and Rangeland Health Standards.

Recreation

Since completion of the Escalante, Paria, Vermilion, and Zion MFPs in 1981 and the CBGA-RMP in 1986, considerable changes have occurred within the decision area in regards to recreation use. In certain parts, increased visitor use is affecting soil, water, vegetation, and wildlife. Additionally, the potential for conflicts between recreationists is increasing.

The existing ERMA was designated primarily because there was no need for more intensive recreation management; however, recreation use has significantly increased since the implementation of current management direction. Portions of the existing ERMA may need to be designated as SRMAs to effectively manage the area's changing recreation patterns. The planning process should consider a benefits based recreation planning system to identify recreation niche opportunities that exist and for determining potential SRMAs. SRMAs would assist in protecting resources from the impacts of recreation use and in improving recreational opportunities. Along these lines, some of the existing plans propose facility developments which were never accomplished. In reviewing the need to designate SRMAs, the RMP process can evaluate if these areas with proposed facilities still require the facilities to manage concentrated recreation use.

Recreation Opportunity Spectrum (ROS) classes have not been defined for any portion of the decision area. An ROS inventory and objective setting through the RMP should be considered to provide a better assessment tool for determining development impacts to the recreation resources. ROS classes would also provide the opportunity to help define visitor experiences. Recent application of other recreation management philosophies, such as a Benefit-Based Recreation framework, could be considered for application in the EIS alternatives.

Conflict between motorized and nonmotorized users was identified as a concern during the public scoping process. Specific management initiatives such as travel plans, recreation zoning, OHV play areas, developed sites, and improved interpretation and education could be considered to improve opportunities and reduce conflict.

Recreation that occurs along travel corridors and at highly developed sites remains popular. As visitation to these sites increases, management of the areas may need to focus more heavily on providing defined recreation experiences. Users of front country recreation sites typically expect more extensive interpretive information and facilities. Areas that were once dispersed recreation sites may have become de facto front country recreation sites through increased use. This process can address these high-use areas and protect the recreation opportunity while protecting the resource values.

Transportation

Existing transportation management decisions are out of date. The decisions are limited largely to OHV area designations, and in that regard do not provide for the existing demands for OHV use while providing for sustained resource protection. Existing OHV designations should be reviewed and modified where needed to meet changing levels of OHV use, existing resource condition, and changing resource objectives. Designations should be coordinated with adjacent land management agencies.

Emergency closures for Parunuweap Canyon, North Fork Virgin River, and Orderville Canyon WSAs will need to be reviewed to determine if they should become permanent. The proliferation of OHV routes that cause substantial impacts to other resources could need additional management and attention. Transportation-related use conflicts also need additional management and attention.

Additionally, existing plans do not differentiate between other aspects of transportation, such as recreational, traditional, casual, agricultural, administrative, commercial or educational use of the transportation system. Outside of OHV use, existing plans do not address any other modes of use or conditions for such use. This planning process could establish comprehensive travel system planning, addressing these aspects of use in relation to the existing transportation system and resource values, providing for modifications to the transportation system to meet the resource and use demands.

Lands and Realty

Current management direction regarding lands and realty management primarily focuses on provisions for ROWs, terminating ROWs that are no longer needed, establishing ROW corridors, and identifying areas for disposal, withdrawal, and acquisition. Current management has been sufficient in managing lands and realty within the decision area with the exception of land disposals for community expansion. Increasing use of the planning area and demands on resources will elevate the role of the lands and realty program to manage the increase in requests for authorizations, permits, leases, and land tenure adjustments. Therefore, the new RMP will need to include management strategies designed to accommodate these increased land requests.

Current management actions are somewhat specific and prescriptive, which can limit management flexibility and the discretion of the Field Office Manager to approve some land tenure adjustment actions. Developing broad management goals with objectives aimed at achieving these goals would provide overall management direction for the lands and realty program. This would, in turn, guide the development of more specific management actions designed to achieve the stated goals and objectives. Management flexibility should be written into the plan through a process by which management actions could be modified, provided they are consistent with the stated goals and objectives. Thus, the land tenure adjustment criteria contained in the 1998 land use plan amendment for evaluating future proposals should be continued, with some possible modifications.

The demand for utility lines, additional roads, and access to communication sites is anticipated to increase over the life of the new RMP. As a result, existing ROW corridors should be evaluated and adjusted and new corridors established where necessary in coordination with neighboring BLM, other Federal, and tribal jurisdictions and major utility companies. To aid in this process, ROW avoidance and exclusion areas should be identified, delineated, and mapped with consideration for the goals and objectives of other resources. The RMP should also focus on inventory, planning, and management of new and existing communication sites.

Current withdrawal areas should be reviewed if this has not already been done; any retained withdrawals will require development of management plans. Recommendations for additional withdrawals should also be considered to protect resource values, which would require collaboration with all other resource programs to determine appropriate withdrawal areas. Such collaboration should also include discussions on identifying areas for disposal, with consideration given to the needs of local and other government entities, consolidation of public lands, and community expansion.

Minerals and Energy

The Kanab RMP will need to incorporate best management practices and best technology available for minerals and energy development. The coal screening process would be applied to identify areas acceptable for further leasing consideration. Current lease stipulations for oil and gas development and accompanying waiver, exception, and modification criteria should be reviewed and modified to ensure consistency with resource management objectives. The Kanab RMP should also identify potential areas for coal bed natural gas development and address potential conflicts between coal and coal bed natural gas development. The Kanab RMP will need to develop and incorporate an RFD scenario for leasable, locatable, and salable minerals development.

The Energy Policy and Conservation Act Amendments of 2000 (EPCA) directed the Secretary of the Interior, in consultation with the Secretaries of Agriculture and Energy, to conduct an inventory of oil and gas resources beneath Federal lands. The inventory is contained within the January 2003 EPCA Report. The EPCA inventory provided estimates of undiscovered technically recoverable resources and proved reserves of oil and gas beneath five major geologic basins in the western United States and an inventory of the extent and nature of limitations to their development. The Paradox/San Juan Basin, which is partly located within the decision area, is one of the five priority inventory areas. The Paradox/San Juan Basin and the other 4 basins were selected because these basins contain most of the onshore natural gas and much of the oil under Federal ownership.

The Kanab RMP should identify areas recommended for withdrawal from locatable mineral entry and any terms, conditions, or other special considerations necessary to protect other resource values while operating under the mining laws. Areas currently withdrawn from locatable mineral entry should be reviewed to determine if the withdrawal is necessary. Additional areas could be recommended for withdrawal. The RMP should identify areas open or closed to disposal of salable minerals and any terms,

conditions, or other special considerations necessary to protect resource values while operating under the mineral materials laws and regulations.

Development of renewable energy resources would also be addressed in the new RMP. The pending completion of the Programmatic Wind Energy Development Plan Amendment should be integrated. Consideration should be given to where renewable energy sources such as solar, wind, and biomass energy could be developed.

SPECIAL DESIGNATIONS

Areas of Critical Environmental Concern

As part of the RMP process, the Water Canyon/South Fort Indian ACEC will be reevaluated to determine if the relevant and important values are still present. Management prescriptions for these areas will also be reviewed to ensure they can protect the identified R&I values.

In accordance with FLPMA, during the RMP process, consideration will be given to the designation of additional ACECs. Areas that are considered suitable for ACEC designation will be identified, have management developed to protect R&I values, and be brought forward for analysis in the EIS.

National Trails

The planning process could identify a range of management to protect the historic values along the Old Spanish Trail. Potential management should be closely coordinated with NPS and other BLM offices through which the trail segments pass to standardize management.

Wild and Scenic Rivers

Section 5(d) of the Wild and Scenic Rivers (WSR) Act directs Federal agencies to consider the potential for national wild, scenic, and recreational river areas in land use planning documents; therefore a WSR review will be part of the RMP revision process. All potentially eligible intermittent and perennial river segments in the planning area will be reviewed by an interdisciplinary team to determine if they are free-flowing and contain outstandingly remarkable values that make them eligible for Congressional designation into the NWSRS. All eligible river segments will be assigned a tentative classification of wild, scenic or recreational, and will be considered in the RMP/EIS as to their suitability for Congressional designation into the NWSRS. A range of alternatives will be considered, including one alternative where all of the eligible rivers would be managed as suitable, and one alternative where none of the eligible rivers would be managed as suitable. The Paria River will continue to be managed to protect the outstandingly remarkable values for which it has been deemed eligible.

Wilderness

While not specifically addressed in any of the existing land use plans, wilderness areas require more intensive management once they are designated. The Wilderness Act directs that wilderness areas be managed to provide for their protection, the preservation of their natural conditions, and the preservation of their wilderness character. BLM will continue to manage wilderness in this manner. An implementation-level Wilderness Management Plan was completed for the Paria Canyon-Vermilion Cliffs Wilderness in 1986. This RMP process should review the guiding decisions for the Paria Canyon-Vermilion Cliffs Wilderness (in coordination with the BLM Arizona Strip Field Office, who co-manages the wilderness with Kanab Field Office) and provide landscape-level direction to ensure protection of

wilderness characteristics. Such direction could be utilized in future revisions of or amendments to the Wilderness Management Plan.

Wilderness Study Areas

For the most part, current management of the five WSAs has been adequate to protect the wilderness characteristics of those areas. However, some problem areas have recently developed. Increased OHV use has begun to threaten the wilderness characteristics of WSAs. The RMP will need to address this issue through route designations and travel management decisions for these areas in order to continue to protect the WSAs' wilderness characteristics. Additionally, the RMP will need to address BLM guidance, which requires that all WSAs be designated VRM Class I through the RMP process.

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CHAPTER 5—CONSISTENCY/COORDINATION WITH OTHER PLANS

According to guidance found in FLPMA (43 CFR 1610), BLM RMPs and amendments must be consistent, to the extent practical, with officially approved or adopted resource-related plans of other Federal, state, local, and tribal governments so long as the guidance and RMPs are also consistent. BLM RMPs must also be consistent with the purposes, policies, and programs of FLPMA and other Federal laws and regulations related to public lands, including Federal and state pollution control laws (see 43 CFR 1610.3-2 [a]). If these other entities do not have officially approved or adopted resource-related plans, then BLM RMPs must, to the extent practical, be consistent with those entities' officially approved and adopted resource-related policies and programs. This consistency will be accomplished so long as BLM RMPs incorporate the policies, programs, and provisions of public land laws and regulations and Federal and state pollution control laws (see 43 CFR 1610.3-2 [b]).

Before BLM approves RMP decisions, the Governor has 60 days to identify inconsistencies between the proposed plan and state plans and programs, and to provide written comments to the BLM State Director. BLM and the state may mutually agree on a shorter review period. If the Governor does not respond within this period, it is assumed that the proposed RMP decisions are consistent. If the Governor recommends changes in the proposed plan or amendment that were not raised during the public participation process, the State Director shall provide the public with an opportunity to comment on the recommendations (see 43 CFR 1610.3-2 [e]). This public comment opportunity will be offered for 30 days and may coincide with the 30-day comment period for the Notice of Significant Change. If the State Director does not accept the Governor's recommendations, the Governor has 30 days to appeal in writing to the BLM Director (see 43 CFR 1610.3-2[e]).

County, state agency, and other Federal agency plans for neighboring areas or cross-jurisdictional purposes are further discussed in the following sections, and should be consulted as applicable during RMP development.

COUNTY PLANS

The planning area encompasses approximately 2,913,000 acres located in portions of Kane and Garfield Counties. This includes Federal mineral estate and non-monument land administered by GSENM. The planning and decision areas also include a small portion of eastern Iron County situated between Dixie National Forest and BLM administered lands in Garfield County. Due to the very small and isolated nature of Iron County portions of the decision area, the Iron County plan was not considered in this planning effort.

Kane County, Utah

Kane County prepared a general plan in 1998 to provide for the health, safety, and general welfare of both residents and visitors to the county. This plan outlines goals and policies for unincorporated land use, transportation and circulation, environment, public services and facilities, rehabilitation and conservation, economic development, housing, and public lands, which comprises approximately 90 percent of the county. Components of the Kane County General Plan are further discussed in Table 40.

Table 40. Kane County General Plan

Component	Description
Date	June 22, 1998
Purpose	"The Utah County Land Development and Management Act of 1992 is the enabling legislation adopted by the State Legislature authorizing county governments to undertake land use planning and management. The Act allows counties to: 1) provide for the present and future needs of the county; 2) plan for the growth and development of land; 3) provide for health, general welfare, safety, energy conservation, transportation, prosperity, civic activities, aesthetics, recreation, education, and cultural opportunities; 4) reduce waste of physical, financial, or human resources; 5) provide for the efficient and economical use, conservation and production of natural resources; 6) encourage the conservation of energy and use of renewable energy resources; and 7) protect urban development" (p. 14).
Common, Dependent and Interdependent Resources	"Federal land management planning processes will include Kane County as an active, on-going partner and will be consistent with county goals and policies when not constrained by Federal law." (p. 13). Key issues, goals and policies are outlined in the plan to support Kane County's position on the following matters: grazing, water quality, wildlife habitat, land use changes, minerals exploration and development, cultural and archaeological resources, recreation, special land designations, and air quality (pp. 56-82).
Planning Implications	The key issues, goals and policies outlined in the 1998 Kane County General Plan should be considered for any management actions that could occur in the area.

Source: Five County Association of Governments 1998a

Garfield County, Utah

Garfield County prepared a general plan for the present and future needs, and growth and development of the county. A description of the Garfield County General Plan is provided in Table 41.

Table 41. Garfield County General Plan

Component	Description
Date	Adopted March 13, 1995 and Amended January 26, 1998
Purpose	"The Utah County Land Development and Management Act of 1992 is the enabling legislation adopted by the State Legislature authorizing county governments to undertake land use planning and management. The Act allows counties to: 1) Provide for the present and future needs of the county; 2) plan for the growth and development of land; 3) provide for health, general welfare, safety, energy conservation, transportation, prosperity, civic activities, aesthetics, recreation, education, and cultural opportunities; 4) reduce waste of physical, financial, or human resources; 5) provide for the efficient and economical use, conservation and production of natural resources; 6) encourage the conservation of energy and use of renewable energy resources; and 7) protect urban development" (p. ii).
Common, Dependent and Interdependent Resources	"Approximately 89 percent of Garfield County is Federally owned. Since such a large portion of the county is owned by the Federal government, Federal land management and resource planning efforts carry implications for local planning-related activities and influence the scope of local planning documents" (p. 6-1). Current status, planning assumptions, and policy statements are outlined in the plan to support Garfield County's position on land use changes, shared revenue, wildlife habitat, renewable resources, livestock grazing, preservation and enhancement of public lands, and special land designations (pp. 6-1 and 6-31).
Planning Implications	The directions and policy statements outlined in the Garfield County General Plan should be considered for any management actions that could occur in the area.

Source: Five County Association of Governments 1998b

Scenic Byway 12 Corridor Management Plan

The Scenic Byway 12 Corridor Management Plan was prepared for Garfield County and Wayne County Commissions. Scenic Byway 12 traverses the northern part of the decision area. A description of the plan is provided in Table 42.

Table 42. Scenic Byway 12 Corridor Management Plan

Component	Description
Date	December 2001
Purpose	"A corridor management plan (CMP) is a document that details the future strategies and actions for management of the byway. The plan is one that is compiled by the people of the local communities who have a vested interest in the protection and enhancement of the byway and its corridor. It is important to note that the CMP is not an instrument to regulate conditions, mandate change, or condemn private property. The plan identifies the special qualities of the corridor and addresses how to sustain the character of Scenic Byway 12" (p. 2).
Common, Dependent and Interdependent Resources	Approximately 95% of Scenic Byway 12 passes through Federal land (p. 13). Goals, strategies, and proposed action are outlined in the plan for archeological, cultural, historic, natural, recreational, and scenic resources (pp. 17 - 44).
Planning Implications	BLM should consider implications of the goals, strategies, and proposed actions from the CMP when developing management actions for the RMP.

Source: Five County Association of Governments 2001

STATE PLANS

A description of the State of Utah Natural Resources, Division of Parks and Outdoor Recreation Plan is provided in Table 43.

Table 43. State Comprehensive Outdoor Recreation Plan 2003

Component	Description
Date	May 7, 2003
Purpose	"The purposes of the State Comprehensive Outdoor Recreation Plan (SCORP) include: Developing a strategic outdoor recreation reference document; Assisting outdoor recreation resource planning and management in Utah; Proposing an outline of desired actions and goals for statewide outdoor recreation for at least five years; Providing a citizen-input forum to suggest outdoor recreation needs, strategies and rationale for achieving goals—a useful Open Project Selection Process; Facilitating essential coordination for outdoor recreation development by multiple agencies and interests for a variety of outdoor recreation activities throughout the state; Assisting and guiding state, local and Federal decision-making regarding outdoor recreation in Utah; and Maintaining the 1965 LWCF Act requirements for eligibility to receive matching grant allocations from Congress through the auspices of NPS and the U.S. Department of the Interior (P.L. 88-578)" (p. 3).
Common, Dependent, and Interdependent Resources	"The major objective of the Utah SCORP is to provide information about high quality outdoor recreation opportunities through LWCF grants and other programs, to improve the quality of life and health in Utah while providing facts and recommendations to help guide and justify allocations of scarce matching grant dollars" (p. 3). The Utah SCORP assists entities in rational decision making regarding policy and expenditure on outdoor recreation and development (p. 2).

Component	Description
Planning Implications	BLM should consider the Utah SCORP as a resource for planning.

Source: Utah Division of Parks and Recreation 2003

A description of the Coral Pink Sand Dunes State Park General Management Plan and its implications to this planning effort is provided in Table 44

Table 44. Coral Pink Sand Dunes State Park General Management Plan

Component	Description
Date	December 2004
Purpose	"The General Management Plan is intended to help guide the Utah Division of Parks and Recreation's stewardship obligations for Coral Pink Sand Dunes State Park. Planning for the park is essential given that the recent increases in visitation may necessitate larger facilities and more diverse recreation programs to better accommodate park visitors." (p. 5).
Common, Dependent, and Interdependent Resources	The plan addresses general management issues such as multiple use recreation opportunities, visitor education, outside partnerships (including the partnership with BLM), facilities development, interpretation and education, staffing and funding, and signage. (p. 1) Common resources addressed include endangered and sensitive species (recommendations for continued conservation in cooperation with BLM) and education opportunities (recommendations for coordination with Federal, county, and local agencies to develop a standard guide on issues and closures) (p. 15-16).
Planning Implications	The recommendations for adjacent land uses outlined in this general management plan should be considered in the RMP. The Vermillion MFP 2000 Amendment decisions that define the BLM and State Parks joint management should be carried forward through the RMP process, as well as coordinating other resource management decisions with the State Park.

Source: Utah Division of Parks and Recreation 2004

The Utah State Water Plan estimates Utah's available water supply, makes projections of water need, explores how these needs will most efficiently be met, and discusses other important values, including water quality and the environment. The plan is intended to be a useful guide and reference to local water planners and managers as they strive to meet the many water challenges facing Utah. Table 45 identifies how this plan affects this planning effort.

Table 45. Utah's Water Resources: Planning for the Future

Component	Description
Date	May, 2001
Purpose	"The purpose of <i>Utah's Water Resources: Planning for the Future</i> is to describe the current status of Utah's water resources and evaluate the demands that will be placed upon them in the future. This involves quantifying available water supply, estimating current and future uses, and identifying ways to obtain new water supplies and manage existing supplies to satisfy future needs. This plan presents the state's position on water development, water conservation, environmental issues affecting water resources and water quality. A main goal of this document is to help water managers, planners, legislators and other parties formulate the management strategies and policies needed to direct their efforts into the new century. This document should also be a valuable resource for those in the general public interested in contributing to waterrelated decisions at all levels of government."

Component	Description
Common, Dependent, and Interdependent Resources	<p>"The federal government, primarily the U.S. Forest Service and the Bureau of Land Management, administers about two-thirds of the land area in the state of Utah. More significantly, they own and manage the headwaters of almost all the watersheds from which the state's surface water supply is derived and the state's population is dependent. Utah is concerned about the ability of these lands to yield a high quality, nondeclining supply of water to its communities for agricultural, [municipal and industrial] and other uses" (p. 59).</p> <p>"Before designating streams and rivers as "wild and scenic," state, federal and local agencies should assure that all the potential water management and other resource impacts such designation would have far into the future are assessed [sic]. They must also ensure that designation is done in the spirit of the WSRA and not simply used as a tool to impede water and other important resource development" (p. 58).</p> <p>"...the 1990 <i>Utah State Water Plan</i>... was a comprehensive water plan and resource inventory for the state and provided a basis for more detailed planning at the hydrologic river basin level. Subsequent plans for each of the state's basin plan areas...have been completed. These river basin plans inventory basin water supplies, provide present and future water use information, and address problems and issues facing local water resources stakeholders. These plans are being used by local and statewide planners to make informed water resources decisions" (p. 3-4)</p>
Planning Implications	BLM should consider the Utah State Water Plan and its guidance, including subsequent Basin River Plans, in the RMP process.

Source: Utah Division of Water Resources 2001

OTHER FEDERAL AGENCY PLANS

National Park Service, Utah

Zion National Park and Bryce Canyon National Park share boundaries with BLM public lands managed by the Kanab Field Office. A description of the NPS plans is provided in Table 46 and Table 47.

Table 46. Zion National Park General Management Plan

Component	Description
Date	August 2001
Purpose	"The purpose of this plan is to describe the general path NPS intends to follow in managing Zion National Park over the next 20 years. The plan will provide a framework for proactive decision making on such issues as visitor use, natural and cultural resource management, and park development, which allow park managers to effectively address future problems and opportunities" (p. iii).
Common, Dependent, and Interdependent Resources	The plan proposes two river segments that are contained within the park but have reaches within decision area. These river segments are East Fork of the Virgin River (in Parunuweap Canyon) and North Fork of the Virgin River (in Orderville Gulch), both of which are proposed for designation as wild rivers.
Planning Implications	The direction and proposals for adjacent land uses outlined in this general management plan should be considered in the RMP.

Source: NPS 2001b

Table 47. Bryce Canyon National Park Fire Management Plan and Environmental Assessment/Assessment of Effects

Component	Description
Date	November 2004
Purpose	"The purpose of fire management planning at Bryce Canyon National Park is to protect and conserve the natural and cultural resources of the park for the enjoyment of present and future generations. This includes perpetuation of the ecosystem in which these resources occur. Fire management is a tool used to maintain and/or restore ecological integrity. Fire management is also intended to protect human life and property, both public and private" (p. 1).
Common, Dependent, and Interdependent Resources	"The proposed action would allow for implementation of the full range of fire management activities, including wildland fire use and fuels management. Wildland fire activities would include suppression and use of wildland fire for resource benefit. Fuels management activities would include prescribed fire, and mechanized and herbicidal treatments. The main focus of these activities and treatments as currently emphasized by national policy is public and fire fighter safety, communities identified as at risk from wildland fires (wildland urban interface), historic fire regime, current condition class, and collaboration with other agencies and stakeholders" (p. ii).
Planning Implications	The FMP and activities described should be considered for any management actions that could affect resources or resource uses near the park.

Source: NPS 2004

NEIGHBORING AGENCY CONSULTATION AND COORDINATION

The Kanab Field Office plans to collaborate with other Federal, state, and local agencies and governmental entities throughout the RMP process. Coordination was initiated with Kane and Garfield Counties, State of Utah, USFWS, and Native American tribes. To date, several cooperating agencies have been identified including Kane and Garfield Counties, State of Utah, USFWS, and Kaibab-Paiute Tribe. Additional opportunities for coordination with other agencies will be sought throughout the RMP and EIS development process. Project phases where state and local governments, other Federal agencies, and tribal government involvement could prove to be most critical to ensure consistency include scoping, alternatives development, impacts analysis, and public and agency comment periods.

CHAPTER 6 – SPECIFIC MANDATES AND AUTHORITIES

The foundations of public land management are located in the mandates and authorities provided in laws, regulations, and executive orders. These statements of Federal policy direct BLM concerning management of public lands and resources. The U.S. Congress has acknowledged that the appropriate use of these resources requires proper planning. BLM's planning process (as described in 43 CFR 1600) is authorized and mandated through two important laws.

Federal Land Policy and Management Act of 1976 states that BLM “shall, with public involvement...develop, maintain, and when appropriate, revise land use plans” (43 U.S.C. 35 Section 1712 (a)). In addition to Federal direction for planning, FLPMA declares the policy of the United States concerning the management of Federally owned land administered by BLM. Key to this management policy is the direction that BLM “shall manage the public lands under principles of multiple use and sustained yield, in accordance with the [developed] land use plans” (43 U.S.C. 35 Section 1732 (a)). The commitment to multiple-use will not mean that all land will be open for all uses. Some uses may be excluded on some land to protect specific resource values or uses, as directed by FLPMA (43 U.S.C. 35 Sections 1712 (c) (3)). Any such exclusion, however, will be based on laws or regulations or be determined through a planning process subject to public involvement. In writing and revising LUPs, FLPMA also directs BLM to coordinate land use activities with the planning and management of other Federal departments and agencies, state and local governments, and Indian tribes. This coordination, however, is limited “to the extent [the planning and management of other organizations remains] consistent with the laws governing the administration of the public lands” (43 U.S.C. 35 Section 1712 (c) (9)).

In the **National Environmental Policy Act of 1969**, the Congress directs “all agencies of the Federal Government...[to]...utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment” (42 U.S.C. 55 Section 4332 (2A)). Because the development of a new RMP may cause impacts to the environment, NEPA regulations require the analysis and disclosure of potential environmental impacts in the form of an EIS. The EIS will examine a range of alternatives, including a No Action Alternative, to resolve the issues in question. Alternatives should represent complete, but alternate means of satisfying the identified purpose and need of the EIS and of resolving the issues. The Kanab RMP/EIS is being prepared using the best available information.

In addition to these acts, management of public land and resources is authorized and directed through several resource and resource use specific laws, regulations, and executive orders. The direction from these sources is refined and made department- and bureau-specific through agency documents such as Instruction Memoranda (IM), Information Bulletins (IB), and manuals and handbooks. Following are some of the documents that direct the management of public land and resources.

LAWS, REGULATIONS, AND ORDERS

- Act of May 24, 1928 (airport leases)
- Airport and Airways Improvement Act, (49 U.S.C. 47125 *et seq.*)
- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
- Antiquities Act of 1906 (16 U.S.C. 431–433)
- Appropriations Act of 1952, McCarran Amendment
- Archeological Resources Protection Act of 1979, as amended (16 U.S.C. 470)

- Carlson-Foley Act (P.L. 90-583)
- Classification and Multiple Use Act of September 1964, in accordance with 43 CFR 2400
- Clean Air Act, as amended (42 U.S.C. 7418)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. 9600)
- Color of Title Act, as amended (43 U.S.C. 1608 *et seq.*)
- Colorado River Basin Salinity Control Act of 1974
- Combined Hydrocarbon Leasing Act of 1981
- Desert Land Entry Act, as amended (43 U.S.C. 321 *et seq.*)
- Economy Act of 1932, as amended
- Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3900)
- Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*)
- Energy Policy and Conservation Act (EPCA), as amended (42 U.S.C. 6201)
- Federal Cave Resources Protection Act of 1988 (16 U.S.C. 4301 *et seq.*)
- Federal Coal Leasing Amendments Act of 1976 (30 U.S.C. 201)
- Federal Noxious Weed Act of 1974 (7 U.S.C. 2814)
- Federal Water Pollution Control Act [commonly referred to as the Clean Water Act], as amended (33 U.S.C. 1251–1387)
- Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*)
- General Mining Law of 1872, as amended (30 U.S.C. 21 *et seq.*)
- Healthy Forests Restoration Act of 2003
- Historic Sites Act of 1935 (16 U.S.C. 461)
- Homestead Act of 1862 (Although repealed in 1976, the effects of this act are visible and impact some management decisions.)
- International Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711)
- Migratory Bird Conservation Act of 1979 (16 U.S.C. 715)
- Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 *et seq.*)
- Mining and Mineral Policy Act of 1970 (30 U.S.C. 21a)
- Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528-531)
- National Historic Preservation Act, as amended (16 U.S.C. 470)
- National Trails System Act, as amended (16 U.S.C. 1241)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001)
- Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. 181 *et seq.*)
- Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901)
- Recreation and Public Purposes Act, as amended (43 U.S.C. 869 *et seq.*)
- Reservoir Salvage Act of 1960 (16 U.S.C. 469)
- Safe Drinking Water Act of 1974 (42 U.S.C. 201)
- Sikes Act (16 U.S.C. 670 *et seq.*)
- Soil and Water Resources Conservation Act of 1977 (16 U.S.C. 2001)
- Soil Conservation and Domestic Allotment Act of 1935, as amended
- Solid Waste Disposal Act, as amended (42 U.S.C. 6900)
- Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 *et seq.*)
- Taylor Grazing Act of 1934 (43 U.S.C. 315)
- Utah Schools and Lands Exchange Act of 1998 (P.L. 105-335)
- Utility Corridor Designation, U.S. Route 89, Kane County, Utah (from P.L. 105-355 Sec. 202)
- Water Resources Development Act of 1974
- Water Resources Planning Act of 1965, as amended
- Water Resources Research Act of 1954, as amended
- Watershed Protection and Flood Control Act of 1954
- Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271 *et seq.*)
- Wilderness Act, as amended (16 U.S.C. 1131 *et seq.*)

- EOs 10046, 10175, 10234, 10322, 10787, and 10890 (Authorize the transfer of certain lands from the United States Department of Agriculture (USDA) to the DOI for use, administration, or exchange under the Taylor Grazing Act of 1934)
- EO 11288 (water quality management and pollution abatement plans)
- EO 11507 (protect and enhance the quality of air and water resources)
- EO 11514 as amended by EO 11991 (Protecting and enhancing the quality of the nation's environment to sustain and enrich human life)
- EO 11593 (Protection and Enhancement of the Cultural Environment)
- EO 11644 (Use of off-road vehicles on the Public Lands)
- EO 11738 (Enforce the Clean Air Act and the Clean Water Act in the procurement of goods, materials, and services)
- EO 11752 (Protect and enhance the quality of air, water, and land resources through compliance with applicable Federal, state, interstate, and local pollution standards)
- EO 11987 (Exotic Flora and Fauna)
- EO 11988 as amended by EO 12148 (Floodplain Management)
- EO 11989 (Off-road vehicles on Public Lands)
- EO 11990 (Protection of Wetlands)
- EO 12088 (Federal Compliance with Pollution Control Standards)
- EO 12322 requires that any report, proposal, or plan relating to a Federal or Federally assisted water and related land resources project or program must be submitted to the Director, Office of Management and Budget, before submission to the Congress
- EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)
- EO 13007 (Indian Sacred Sites)
- EO 13084 (Consultation and Coordination with Indian Tribal Governments)
- EO 13112 (Invasive Species)
- EO 13175 (Tribal Status in NEPA)
- EO 13186 (Federal Agency Responsibilities Under the Migratory Bird Treaty Act)
- EO 13287 (Preserve America: Cultural Resources Management)
- President's Letter of May 26, 1974 (Creates the Interagency Committee on Water Resources and establishes interagency participation in river basin planning)
- Secretarial Order 3175 (incorporated into the Departmental Manual at 512 DM 2)
- Secretarial Order 3206 (American Indian Tribal Rights, Federal–Tribal Trust Responsibilities, and the Endangered Species Act)
- Secretarial Decision 79:001 (Protects Bryce Canyon National Park scenic vistas on areas outside the park boundaries)
- Regional Haze Regulation (Federal Register/Vol. 64, No. 126; 35714 July 1, 1999)
- 43 CFR Chapter 2 Parts 1000 – 9999 (Federal Regulations for BLM)
- 36 CFR, 62 (Addresses procedures to identify, designate, and recognize National Natural Landmarks)
- The U.S. Water Resource Council published Floodplain Guidelines on February 10, 1978, after being directed to establish guidelines for floodplain management and preservation
- The Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (*Federal Register*, October 18, 2000)
- National Ambient Air Quality Standards (40 CFR Parts 50.4–50.12)
- New Source Review (40 CFR Part 51.307)
- Regional Haze Rule (40 CFR 51)
- “Treatment as a State” Regulation (40 CFR Part 71)
- National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)
- Order of Withdrawal, Public Water Reserve No. 10, Utah No. 5, 1913
- Order of Withdrawal, Public Water Reserve No. 107, 1926

INSTRUCTION MEMORANDA, INFORMATION BULLETINS, AND HANDBOOKS

- IM 78-410 (Protection of Wetlands and Riparian Areas)
- IM 78-523 (Compliance with BLM Interim Floodplain Management Procedures)
- IM-UT-83-144 (Visual resource mitigation to oil and gas facilities)
- IM 87-261 (Implementation of the Riparian Area Management Policy)
- IM 99-085 (Federal Multi-Agency Source Water Agreement)
- IM 99-123 (Reporting to the Colorado River Salinity Control Forum)
- IM 2000-096 (Use of VRM Class I Designation in WSAs)
- IM 2000-179 (Funding of Water-Related Restoration and Cleanup Projects on Private and Other Non-BLM Lands)
- IM-UT-2001-034 (Utah Planning Strategy for Municipal Watershed and Other Water Source Protection Plans)
- IM-UT-2001-090 (Implementation of Utah Recreation Guidelines)
- IM 2002-164 (Guidance to Address Environmental Justice in Land Use Plans and Related NEPA Documents)
- IM 2002-167 (Social and Economic Analysis for Land Use Planning)
- IM 2002-174 (Oil and Gas Leasing Stipulations)
- IM 2002-196 (ROW Management in Land Use Planning)
- IM-UT-2003-027 (BLM Sensitive Plant Species List for Utah, August 2002)
- IM 2003-035 (Implementing the President's Healthy Forests Initiative)
- IM 2003-137 (Integration of the EPCA Inventory Results into Land Use Planning and Energy Use Authorizations)
- IM 2003-158 (Memorandum of Understanding [MOU] between BLM and the Animal and Plant Health Inspection Service (APHIS) Addressing the Management of Grasshoppers and Mormon Crickets)
- IM 2003-169 (Use of the Economic Profile System in Planning and Collaboration)
- IM 2003-182 (Geocaching Activities on BLM Public Lands)
- IM 2003-195 (Rescission of National Level Policy Guidance on Wilderness Review and Land Use Planning)
- IM 2003-197 (ROW management, Interstate Natural Gas Pipeline)
- IM 2003-233 (Integration of the EPCA Inventory Results into the Land Use Planning Process)
- IM 2003-234 (Integration of the EPCA Inventory Results into Oil and Gas Exploration and Development Use Authorizations)
- IM 2003-238 (Guidance for Data Management in Land Use Planning)
- IM 2003-274 (BLM Implementation of the Settlement of Utah v. Norton Regarding Wilderness Study)
- IM 2003-275, Change 1 (Consideration of Wilderness Characteristics in Land Use Planning [Excluding Alaska])
- IM 2004-005 (Clarification of OHV Designations and Travel Management in the BLM Land Use Planning Process)
- IM-UT-2004-061 (Designating Off Highway Vehicle Routes in the Land Use Planning Process)
- IM 2004-089 (Policy for RFD Scenario for Oil and Gas)
- IM 2004-196 (Clarification of Policy in the BLM Manual Section 8351, Wild and Scenic Rivers, with Respect to Eligibility Criteria and Protective Management)
- IM 2005-003 (Cultural Resources and Tribal Consultation for Fluid Minerals Leasing)
- IM 2005-006 (Solar Energy Development Policy)
- IM 2005-008 (Black-tailed, White-tailed, and Gunnison Prairie Dog Conservation Update)
- IM 2005-024 (National Sage-Grouse Habitat Conservation Strategy)

- IM 2005-110 (Meeting Healthy Forests Restoration Act Old-Growth Management and National Historic Preservation Act Requirements)
- IB 98-116 (Clean Water Action)
- IB 98-135 (VRM Policy Restatement)
- IB 2003-113 (The Manager's Role in the Land Use Planning Process)
- BLM-H-1601 (Land Use Planning)
- BLM-H-1613 (Areas of Critical Environmental Concern)

APPLICABLE UTAH STATE LAWS, REGULATIONS AND PLANS

- Utah Code, Title 19, Chapter 2, Air Conservation Act
- Utah Air Conservation Rule R307-204, Smoke Management
- Utah Air Conservation Rule R307-406, Visibility
- Utah Air Conservation Rule R307-401-6 (Conditions for Ordering and Approval Order)
- Utah Air Conservation Rule R307-405-4 (PSD Increments and Ceilings)
- Utah Air Conservation Rule R307-405-6 (PSD Areas–New Sources and Modifications)
- Utah Air Conservation Rule R307-410-3 (Modeling of Criteria Pollutants in Attainment Areas)
- Utah Air Conservation Rule R307-410-4 (Documentation of Ambient Air Impacts for Hazardous Air Pollutants)
- Utah Air Conservation Rule R307-205-3 (Emission Standards for Fugitive Dust)
- Utah Air Conservation Rule R307-205-4 (Emission Standards for Roads)
- Utah Code, Title 73, Water and Irrigation.
- Utah Administrative Rule R309-605. Drinking Water Source Protection for Ground-Water Sources
- Utah Administrative Rule R317-2. Standards of Quality for Waters of the State
- Utah Administrative Rule R317-6. Ground Water Quality Protection
- Utah Administrative Rule R317-8. Utah Pollution Discharge Elimination System (UPDES)
- Utah Nonpoint Source Management Plan (October 2000)
- Utah Nonpoint Source Management Plan for Hydrologic Modifications (March 1995)
- Utah Nonpoint Source Management Plan for Silviculture Activities (July 1998)
- Utah State Law 63-38d-401 (State Land Use Management Plans Amendments)
- Utah Code Sections 63-38d-401 (establishes State planning policies in relation to management of Federal land)
- State Comprehensive Outdoor Recreation Plan – 2003
- Strategic Management Plan for Sage-Grouse – 2002
- The Utah Noxious Weed Act
- Utah Seed Act (Utah Code Annotated, Title 4, Chapter 16)
- Utah Strategic Riparian Plan

MEMORANDA AND AGREEMENTS

- Master MOU with USFWS, December 1986
- The rangeland programmatic MOA among BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers
- The Federal coal management programmatic MOA among BLM, Office of Surface Mining, DOI, USGS, and the Advisory Council on Historic Preservation
- State Protocol Agreement Between the Utah State Director of BLM and the Utah SHPO and the Programmatic Agreement Among BLM, the Advisory Council on Historic Preservation, and the National Conference of SHPOs

- Interagency MOU between the Department of the Interior-BLM and the USDA in 1995 (60F26045-48, 5/16/95)
- Supplement No. 1 to an MOU between the Utah State Offices of NPS and BLM dated September 26, 1973
- MOU Concerning WSR Studies in Utah Among the State of Utah and Intermountain Region USFS and Utah BLM and Intermountain Region NPS (1997)
- Memorandum, dated April 8, 2004, from Director, National Landscape Conservation System to Utah State Director regarding 'Clarification of Policy in the BLM Manual Section 8351 Related to Eligibility of River Segments Evaluated Pursuant to Section 5(d)(1) of the Wild and Scenic Rivers Act and Their Protection Afforded under the National Environmental Policy Act and Section 202 and 302 of the Federal Land Policy and Management Act'

PLANNING DOCUMENTS APPLICABLE TO THE DECISION AREA

The direction provided by the various laws, regulations, policies and documents mentioned above is applied to specific resources and areas by developing RMPs. These plans apply Federal law, regulation, and policy at a landscape level by identifying desired outcomes and allowable uses and management actions anticipated to achieve desired outcomes.

Upon approval of the RMP, subsequent implementation decisions are put into effect by developing implementation (activity-level or project-specific) plans. An activity-level plan typically describes multiple projects in detail that will lead to on-the-ground action. Implementation decisions generally constitute BLM's final approval allowing on-the-ground actions to proceed. These types of decisions require appropriate site-specific planning and NEPA analysis.

Other State and Federal agencies are responsible for managing or providing support for resource management within the decision area. Plans related to management of these resources are usually site-specific or resource-specific in nature. The following lists identify the land use plans, implementation plans, and other planning or policy documents, as well as selected NEPA documents, which exist in the decision area.

BLM Land Use Plans

- Escalante MFP – 1981
- Paria MFP – 1981
- Vermilion MFP – 1981
- Zion MFP – 1981
- Cedar-Beaver-Garfield-Antimony RMP – 1986
- Vermilion MFP Amendment: OHV use in the Moquith Mountain WSA and Coral Pink Sand Dunes – 2000
- Vermilion MFP Amendment: Designation of Water Canyon/South Fork Indian Canyon ACEC and No Mans Mesa RNA – 1986
- Paria, Vermilion, and Zion MFP and Garfield Planning Unit of the Cedar-Beaver-Garfield-Antimony RMP Amendment: Lands and Realty decisions – 1998
- Escalante, Paria, Vermilion, and Zion MFPs and Cedar-Beaver-Garfield-Antimony RMP Amendment: Wildland Fire and Fuels Management – 2005
- Notice of Travel Restriction and Seasonal Closure to OHVs – August 10, 2005 – Federal Register Volume 70 Number 153, page 46541
- Temporary Emergency Off-Road Vehicle Limitations – August 29, 2000 – Federal Register Volume 65 Number 165, page 52437

Activity Plans

- Paria Canyon–Vermilion Cliffs Wilderness, Wilderness Management Plan, 1986
- Scenic Byway 12 Corridor Management Plan, 2001
- Fire Management Plan, 2005
- Communication Site Plan: TV Hill, 2002
- Kanab/Escalante Rangeland Program Summary, 1981
- Kanab/Escalante Rangeland Program Summary Update, 1984
- Kanab/Escalante Rangeland Program Summary Update, 1987

Wildlife/Habitat Plans

- Bonneville Cutthroat Trout Conservation Agreement and Strategy for the State of Utah
- Deer Herd Unit #24 (Mount Dutton) Management Plan, 1998
- Deer Herd Unit #27 (Paunsaugunt) Management Plan, 1998
- Deer Herd Unit #28 (Panguitch Lake) Management Plan, 1998
- Deer Herd Unit #29 (Zion) Management Plan, 2001
- Deer Herd Management Plan, Deer Herd Unit 60-A, 1983
- Elk Herd Unit #24 (Mount Dutton) Management Plan, 1998
- Elk Herd Unit #27 (Paunsaugunt) Management Plan, 1998
- Elk Herd Unit #28 (Panguitch Lake) Management Plan, 1998
- Elk Herd Unit #29 (Zion) Management Plan, 1998
- Pronghorn Herd Unit #24/27 (Mount Dutton/Paunsaugunt) Management Plan, Year Unknown
- Utah Cougar Management Plan (DRAFT); UDWR, 1999
- Utah Black Bear Management Plan; UDWR, 2000
- Strategic Management Plan for Chukar Partridge, 2003
- Paria Habitat Area HMP, Bureau of Land Management, Year Unknown
- East Zion HMP, 1982
- Marysvale-Circleville Habitat Area HMP, 1978
- Garfield HMP, 1985
- Paunsaugunt HMP, 1982

Endangered Species Recovery Plans and Conservation Agreements

- Mexican Spotted Owl Recovery Plan, 1995
- Northern States Bald Eagle Recovery Plan, 1983
- American Peregrine Falcon Recovery Plan, 1984
- Utah Prairie Dog Recovery Plan, 1991
- Utah Prairie Dog Interim Conservation Strategy, 1997
- Welsh's Milkweed Recovery Plan, 1992
- Siler Pincushion Cactus Recovery Plan, 1986
- Autumn Buttercup Recovery Plan, 1991
- Conservation Agreement and Strategy for the Coral Pink Sand Dunes Tiger Beetle – March 31, 1997
- Range-Wide Conservation Agreement for Roundtail Chub, Bluehead Sucker, and Flannelmouth Sucker, 2004
- Recovery Plan for the California Condor, 1996
- Final Recovery Plan for Southwestern Willow Flycatcher, 2002
- Interim Conservation Plan for Ambersnails of the Southwestern United States (DRAFT), Year Unknown

Watershed Plans

- Upper Sevier Watershed Management Plan, 2004

Existing Environmental Assessments and Impact Statements

- Oil and Gas Leasing Program Kanab District EA, 1976
- Supplemental Oil and Gas Leasing EA, Cedar City District, 1988
- Kanab/Escalante Grazing Management EIS, 1980
- Utah Combined Hydrocarbon Leasing Regional EIS, 1984
- Utah BLM Statewide Wilderness EIS, 1990
- National Historic Trail Feasibility Study and EA, Old Spanish Trail, 2001
- Utah Land Use Plan Amendment for Fire and Fuels Management, 2005

Other Policy and Guiding Direction

- Federal Wildland Fire Policy
- Utah Riparian Management Policy, 2005
- BLM, Riparian Area Management Policy, January 1987
- Utah BLM's Weed-Free Forage Policy: Use of Certified Noxious Weed Free Hay, Straw or Mulch
- Utah Partners in Flight Avian Conservation Strategy, 2002
- Coordinated Implementation Plan for Bird Conservation in Utah, 2005
- Final Guidelines – Areas of Critical Environmental Concern; Policy and Procedures (45 FR 57318)
- Colorado River Basin Compact
- BLM Wildlife 2000
- Birds of Conservation Concern, 2002
- Riparian-Wetlands Initiative for the 1990s
- Strategy for Future Waterfowl Habitat Management on Public Lands
- Utah Standards and Guidelines for Rangeland Health, 1997
- National Management Strategy for Motorized OHV Use on Public Lands, 2001
- Utah BLM Management Strategy for Motorized OHV Use on Public Lands, 2000
- National Mountain Bicycling Strategic Action Plan, 2002
- Natural Resource Conservation Council Statewide OHV Trail Signing Standards, 2001.
- Utah Wildlife Services Program State of Utah, USDA, APHIS –WS; United States Department of Agriculture and Food and the Utah Agricultural and Wildlife Damage Prevention Board Annual Management Plan, 2005

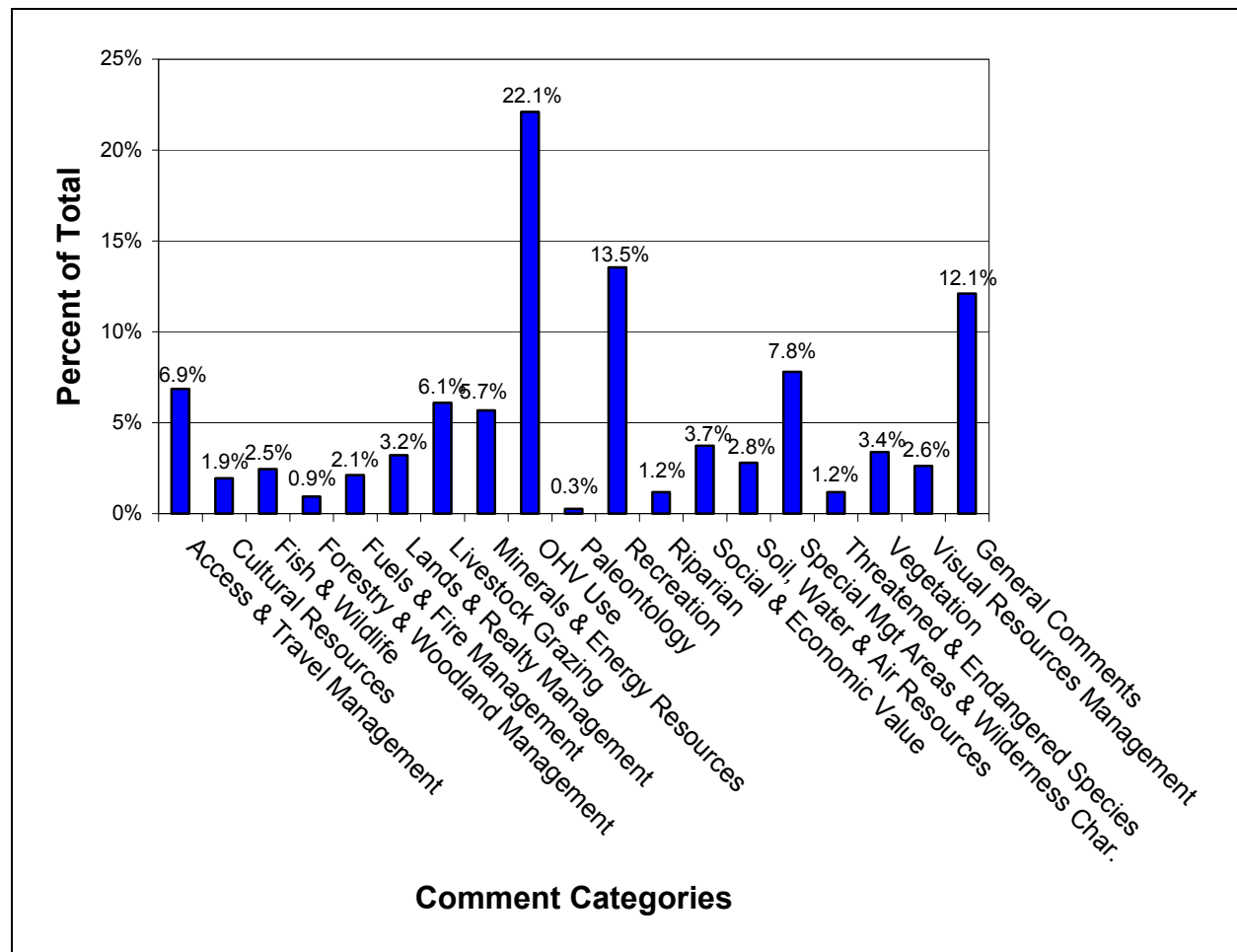
CHAPTER 7 – SUMMARY OF SCOPING

In April 2004, BLM Kanab Field Office initiated a planning process to revise its land use plans with the publication of a Notice of Intent. As part of this process, opportunities for public input were created through a scoping process. The purpose of scoping, as required by NEPA, is to determine the scope and significance of issues related to a proposed action such as the development and implementation of a new RMP (40 CFR 1501.7). These issues guide the development of alternatives that will be evaluated in the EIS and will ultimately guide development of the RMP. Scoping also provides the public an opportunity to learn about the management of public lands and helps BLM identify the public's concerns regarding resources within the decision area. Formal scoping closed on February 15, 2005. The *Scoping Report for the Kanab RMP and EIS* documents issues captured during the scoping process. This report provides a summary of public comments, issues identified, and updates on planning criteria and project schedule.

During the scoping process, the Kanab Field Office met with representatives from Kane and Garfield Counties, as well as from the Kaibab Paiute Tribe. As a result of these meetings, BLM entered into an MOA with each entity to formalize their participation as cooperating agencies in the RMP revision. Existing agreements with the State of Utah and the USFWS also include both as cooperating agencies.

Public scoping meetings provide an opportunity for interested parties to submit scoping comments and to be involved early in the planning process (40 CFR 1501.7). Four public scoping meetings were held over a two-week period in January 2005. Public scoping meetings provided an opportunity for interested parties to submit scoping comments in person. Attendees to meetings in Salt Lake City (31 persons), Kanab (77 persons), Escalante (30 persons), and Panguitch (29 persons) provided hundreds of comments. Additionally, nearly 1,000 individuals submitted written comments during the scoping period. These comments were submitted via mail (64), e-mail (904), video (11), and the RMP Web site (18).

During the scoping period, over 1,150 individuals provided comments by writing BLM or attending public scoping meetings concerning the future management of the decision area. Analysis of approximately 600 unique comments resulted in the identification of issues to be addressed during development of the Kanab RMP. A majority of comments emphasized OHV management, recreation, areas of special designation, and wilderness characteristics. Other issues of high interest include livestock grazing, minerals and energy resources, access to public lands, and social and economic issues. The enumeration of public comments (Figure 5) indicates the relative interest of public commentators towards various broad topics in a position-neutral perspective. This enumeration is not intended to show bias towards any position; it merely indicates the relative level of interest in a specific area. Comments coded as "General" typically discussed very broad management concepts, administrative suggestions, or very specific issues.

Figure 5. Written and Meeting Scoping Comments: Comment Categories Enumeration

For each public comment, a position-neutral issue was identified. This process was used for all scoping input. The issues identified from comments at public scoping meetings were added to written public scoping comments, internal BLM scoping, and interagency scoping. Comments on what issues should be addressed in the RMP and EIS were then placed in one of the three following categories—

- Issues to be addressed in the plan (Chapter 3 of the Scoping Report)
- Issues to be addressed through other policy or administrative action (Chapter 4 of the Scoping Report)
- Issues beyond the scope of the plan (Chapter 4 of the Scoping Report)

Chapter 3 of the Scoping Report identifies the issues that will be carried forward in the planning process. Chapter 4 of the Scoping Report identifies the issues that will not be carried forward and provides justification for not considering them beyond this point. Chapter 5 of the Scoping Report identifies the planning criteria to be used throughout this planning process. Chapter 6 of the Scoping Report discusses the data identified by the public during the scoping process.

The Kanab RMP/EIS Scoping Report and other information on the scoping process, public comments and issues raised, and planning criteria are available by contacting the Kanab Field Office or Utah BLM State Office reading room.

CHAPTER 8 – LIST OF PREPARERS

Table 48 lists those primarily responsible for preparing this AMS and presents their qualifications.

Table 48. List of Preparers

Name	Education	Project Role
Bureau of Land Management		
Allysia Angus	B. A. Communications MLA Landscape Architecture and Environmental Planning	Visual Resources, GSENM Planning Coordination
Randy Beckstrand	B. S. Range Science	Air Quality, Soil and Water Resources, Riparian, Watersheds, Forestry, Livestock Grazing
Tom Christensen	B. S. Forestry M. S. Forest Recreation	Visual Resources, Wilderness Characteristics, Recreation, Transportation, Wilderness, WSR, Special Management Areas
Lorraine Christian	B. S. Wildlife and Fisheries Biology	NEPA Consistency Lead, Lands and Realty
Lisa Church	B.S. Wildlife and Fisheries Ecology	Riparian, Watersheds, Special Status Species (wildlife), Fish and Wildlife, Special Management Areas, Biological Assessment (BA)
Andrew Dubrasky	B. A. English	GIS Analyst
Shawn Peterson	B.S. Range Management	Soil and Water Resources, Vegetation, Special Status Species (plants), Fire and Fuels Management, Livestock Grazing
Doug Powell	B. S. Geology Graduate Certificate – Hazardous Waste Control	Minerals and Energy, Hazardous Waste
Keith Rigtrup	B. A. Economics	Project Manager, Planning Coordination, Socioeconomics
David Sinton	B. S. Forest Management	GIS Analyst
Anne Stanworth		Public Affairs, Public Outreach
Alan Titus	B. S. Geology M. S. Geology PhD Geology	Paleontology
Matthew Zweifel	B.S. Anthropology M. A. Archeology	Cultural Resources
Booz Allen Hamilton		
Erik Anderson	B.S., Civil and Environmental Engineering	Air Quality, Soil and Water Resources, Riparian, Watersheds, Minerals, Hazardous Materials
Quincy Bahr	B.S., Natural Resources Management and Planning M.S., (in progress) Natural Resources Management and Planning	Assistant Project Manager, Cultural Resources, Livestock Grazing, Paleontology, Special Management Areas

Name	Education	Project Role
David Baxter	B.A., Regional Geography & History B.A., honors, Political Geography M.A., Economic Geography HED, Education PhD (in progress)	Project Manager, Agency Coordination, Facilitator, Socioeconomics
Karen DeSimone	M.A., Urban and Environmental Planning	Public Affairs, Public Outreach
Robert Lane	B.A., History M.A., Political Science	Quality Assurance/Quality Control
Aaron Fergusson	B.A., Anthropology M.A., Anthropology MBA, Business Administration	Cultural Resources
Jared Gunnerson	B.A., Environmental Policy MPA, Natural Resource Management	Fire and Fuels Management
Joel Hanson	B.A., Geography and Environmental Studies	GIS Analyst
Bryan Klyse	B.A., Social Science (Environment) MESM, Environmental Science and Management	Lands and Realty
Anjana Mepani	B.A., Environmental Analysis and Design MURP, Urban and Regional Planning	Document Preparation, NEPA review
Al Pierson	B.S., Wildlife Science	Senior Public Lands Advisor
Richard Pinkham	B.A., Geography M.S., Natural Resource Policy and Management	Socioeconomics, Socioeconomic Baseline Report
Dana Purrone	B.A., Environmental Policy B.A., Spanish M.S. (in progress), Environmental Policy and Natural Resource Management	Special Status Species, Fish and Wildlife, NEPA review, BA
Florissa Reynoso	B.A., English	Administrative Record, Document Preparation, Mailing List
Mike Sumner	B.S., Recreation Resource Management	Visual Resources, Transportation, Document Preparation
Lloyd Tabing	B.S., Natural Resource Management B.S., Urban Planning M.S., Natural Resource Management	Visual Resources, Wilderness Characteristics, Recreation, Transportation, Wilderness, WSR, Special Management Areas
Leslie Watson	B.S., Zoology	Vegetation, Forestry
Dave Wegner	B.S., Aquatic Science M.S., Environmental Engineering	Special Status Species, WSR, BA

CHAPTER 9 – ACRONYMS AND GLOSSARY

ACRONYMS

ACEC	Area of Critical Environmental Concern
AMS	Analysis of the Management Situation
APD	Application for Permit to Drill (an oil or gas well)
APHIS	Animal and Plant Health Inspection Service (USDA)
AUM	Animal unit month
BLM	Bureau of Land Management
C&MU	Classification and Multiple Use Act of 1964
CBGA-RMP	Cedar/Beaver/Garfield/Antimony Resource Management Plan
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSP	Concentrating Solar Power
DPC	Desired Plant Community
DWFC	Desired Wildland Fire Condition
EA	Environmental Assessment
EAR	Environmental Assessment Report
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EPCA	Energy Policy and Conservation Act (of 1975)
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act (of 1973)
FLPMA	Federal Land Policy and Management Act (of 1976)

FMP	Fire Management Plan
FRCC	Fire Regime Condition Class
GIS	Geographic Information Systems
GSENM	Grand Staircase-Escalante National Monument
HMP	Habitat Management Plan
HUC	Hydrologic Unit Code
IB	Information Bulletin
IM	Instruction Memorandum
KFO	Kanab Field Office
LUP	Land Use Plan
LWCF	Land and Water Conservation Fund
MFP	Management Framework Plan
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act (of 1969)
NHPA	National Historic Preservation Act
NO _x	Nitrogen Oxides
NPS	National Park Service
NRA	National Recreation Area
NRHP	National Register of Historic Places
NSB	National Scenic Byway
OHV	Off-Highway Vehicle
PFC	Proper Functioning Condition (of riparian/wetland areas)
PILT	Payment In Lieu of Taxes
PM _{2.5}	Particulate Matter (less than 2.5 microns in diameter)
PM ₁₀	Particulate Matter (less than 10 microns in diameter)

PSD	Prevention of Significant Deterioration
R&I	Relevance and Importance
R&PP	Recreation and Public Purposes Act
RFD	Reasonably Foreseeable Development
RMIS	Recreation Management Information System
RMP	Resource Management Plan (BLM land use plan under FLPMA)
RMRS	Rocky Mountain Research Station
RNA	Research Natural Area
ROS	Recreation Opportunity Spectrum
ROW	Right of Way
RS-2477	Revised Statute 2477 (mining law related to road rights-of-way)
SCORP	State (of Utah) Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Officer
SO _x	Sulfur Oxides
SO ₂	Sulfur Dioxide
SOP	Standard Operating Procedure
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
SUFPA	Southern Utah Forest Products Association
SWReGAP	Southwest Regional Gap Analysis Project
T&E	Threatened and/or Endangered (species as per the ESA of 1973)
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TUP	Temporary Use Permit
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources

USFWS	United States Fish and Wildlife Service
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
VOC	Volatile Organic Compounds
VRM	Visual Resource Management
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WUI	Wildland Urban Interface

GLOSSARY

Acquisition. The Bureau acquires land, easements, and other real property rights when it is in the public interest and consistent with approved land use plans. The BLM's land acquisition program is designed to: (1) improve management of natural resources through consolidation of Federal, State and private lands; (2) increase recreational opportunities, preserve open space, and/or ensure accessibility of public lands; (3) secure key property necessary to protect habitat for threatened and endangered species, promote high quality riparian areas, and promote biological diversity; (4) preserve archaeological and historical resources (5) implement specific acquisitions authorized by Acts of Congress.

Activity Plan. A type of implementation plan (see *Implementation plan*); an activity plan usually describes multiple projects and applies best management practices to meet land use plan objectives. Examples of activity plans include interdisciplinary management plans, habitat management plans, recreation area management plans, and allotment management plans (from H-1601-1, BLM Land Use Planning Handbook).

Actual Use. The amount of animal unit months consumed by livestock based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by BLM.

Air Quality. A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances. Refers to standards for various classes of land as designated by the Air Pollution Control Act of 1955, the Clean Air Act of 1963, as amended, and the Air Quality Act of 1967.

All-Terrain Vehicle (ATV). A wheeled or tracked vehicle, other than a snowmobile or work vehicle, designed primarily for recreational use or for the transportation of property or equipment exclusively on undeveloped roads, trails, marshland, open country or other unprepared surfaces (from BLM National Management Strategy for OHV Use on Public Lands).

Allotment. An area of land designated and managed for livestock grazing (43 CFR § 4100.0-5) (from H-4180-1, BLM Rangeland Health Standards Manual).

Allotment Management Plan (AMP). A document prepared in consultation with the grazing lessees or permittees involved, which applies to livestock operations on the public lands and which: **(1)** prescribes the manner in, and extent to, which livestock operations will be conducted in order to meet the multiple-use, sustained-yield, economic and other needs and objectives as determined for the lands by the Secretary concerned; and **(2)** describes the type, location, ownership, and general specifications for the range improvements to be installed and maintained on the lands to meet the livestock grazing and other objectives of land management; and **(3)** contains such other provisions relating to livestock grazing and other objectives found by the Secretary concerned to be consistent with the provisions of this Act and other applicable law (from FLPMA, Title 43 Chapter 35 Subchapter I 1702[k]).

Analysis of the Management Situation (AMS). Assessment of the current management direction. It includes a consolidation of existing data needed to analyze and resolve identified issues, a description of current BLM management guidance, and a discussion of existing problems and opportunities for solving them.

Animal Unit Month (AUM). A standardized measurement of the amount of forage necessary for the sustenance of one cow unit or its equivalent for 1 month. About 800 pounds of useable air-dried forage.

Appropriate Management Response (AMR). The response to a wildland fire based on an evaluation of risks to firefighter and public safety, the circumstances under which the fire occurs, including weather and fuel conditions, natural and cultural resource management objectives, protection priorities, and values to be protected. The evaluation must also include an analysis of the context of the specific fire within the overall local, geographic area, or national wildland fire situation.

Areas of Critical Environmental Concern (ACECs). Areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards (from FLPMA, Title 43 Chapter 35 Subchapter I 1702[a]).

Assessment. The act of evaluating and interpreting data and information for a defined purpose (from H-1601-1, BLM Land Use Planning Handbook).

Authorized Officer. The Federal employee who has the delegated authority to make a specific decision.

Avoidance Area. Areas with sensitive resource values where rights-of-way and Section 302 permits, leases, and easements would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

Back Country Byways. Vehicle routes that traverse scenic corridors utilizing secondary or back country road systems. National back country byways are designated by the type of road and vehicle needed to travel the byway.

Benefits-Based Recreation. A management framework, philosophy or approach to providing recreation and trail resources, facilities, and programs that focuses on identifying the economic, environmental, and social benefits to target recreation users. This management approach builds upon existing activity, facility, or demographic group orientations, but focuses on the outcomes or changes in the target groups.

Best Management Practices. A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. Best management practices are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory (from H-1601-1, BLM Land Use Planning Handbook).

Big Game. Indigenous ungulate wildlife species that are hunted, such as elk, deer, bison, bighorn sheep, and pronghorn.

Candidate Species. Taxa for which the USFWS has sufficient information on their status and threats to support proposing the species for listing as endangered or threatened under the ESA but for which issuance of a proposed rule is currently precluded by higher priority listing actions. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the Federal Register (from M6840, Special Status Species Manual).

Closed. Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 sets forth the specific meaning of “closed” as it relates to off-highway

vehicle use, and 43 CFR 8364 defines “closed” as it relates to closure and restriction orders (from H-1601-1, BLM Land Use Planning Handbook).

Code of Federal Regulations (CFR). The official codification of the current, general, and permanent regulations of Federal government activities.

Collaboration. A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands (from H-1601-1, BLM Land Use Planning Handbook).

Collaborative Partnerships or Collaborative Stewardship. Refers to people working together, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks (from H-1601-1, BLM Land Use Planning Handbook).

Conformance. Means that a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan (from H-1601-1, BLM Land Use Planning Handbook).

Conservation Agreement. A formal written document agreed to by USFWS and/or NMFS and another Federal agency, State agency, local government, or the private sector to achieve the conservation of candidate species or other special status species through voluntary cooperation. It documents the specific actions and responsibilities for which each party agrees to be accountable. The objective of a conservation agreement is to reduce threats to a special status species or its habitat. An effective conservation agreement may lower species’ listing priority or eliminate the need for listing (from M6840, Special Status Species Manual).

Conservation strategy. A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM sensitive species or that have been determined by the U.S. Fish and Wildlife Service or NOAA Fisheries to be Federal candidates under the Endangered Species Act (from H-1601-1, BLM Land Use Planning Handbook).

Consistency. Means that the proposed land use plan does not conflict with officially approved plans, programs, and policies of tribes, other Federal agencies, and state and local governments (to the extent practical within Federal law, regulation, and policy) (from H-1601-1, BLM Land Use Planning Handbook).

Cooperating Agency. Assists the lead Federal agency in developing an EA or EIS. The Council on Environmental Quality regulations implementing NEPA define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any Federal, state, local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency (from H-1601-1, BLM Land Use Planning Handbook).

Council on Environmental Quality. An advisory council to the President of the United States established by the National Environmental Policy Act of 1969. It reviews Federal programs to analyze and interpret environmental trends and information.

Critical Habitat. (1) The specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management

considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon determination by the USFWS and/or the National Marine Fisheries Service that such areas are essential for the conservation of the species. Critical habitats are designated in 50 CFR Parts 17 and 226. The constituent elements of critical habitat are those physical and biological features of designated or proposed critical habitat essential to the conservation of the species. (from M6840, Special Status Species Manual).

Crucial Value Habitat. Any particular range or habitat component that directly limits a community, population or subpopulation to reproduce and maintain itself at a certain level over the long term. Those sensitive use areas that, because of limited abundance and/or unique qualities, constitute irreplaceable critical requirements for high interest wildlife. This may also include highly sensitive habitats, including fragile soils that have little or no reclamation potential. Restoration or replacement of these habitats may not be possible. Examples include: the most crucial (critical) summer and/or winter range or concentration areas; critical movement corridors; breeding and rearing complexes; spawning areas; developed wetlands; Class 1 and 2 streams, lake, ponds or reservoirs; and riparian habitats critical to high interest wildlife.

Crucial Winter Range. The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover.

Cryptobiotic Crust. Biological communities that form a surface layer or crust on some soils. These communities consist of cyanobacteria (blue-green bacteria), micro fungi, mosses, lichens, and green algae and perform many important functions, including fixing nitrogen and carbon, maintaining soil surface stability, and preventing erosion. Cryptobiotic crusts also influence the nutrient levels of soils and the status and germination of plants in the desert. These crusts are slow to recover after severe disturbance.

Cultural Resource or Cultural Property. A definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit described in this Manual series (from M-8100-1, BLM Cultural Resources Management).

Cultural Resource Inventory Classes. (See BLM Manual Section 8110.21.) Class I - existing data inventory. a study of published and unpublished documents, records, files, registers, and other sources, resulting in analysis and synthesis of all reasonably available data. Class I inventories encompass prehistoric, historic, and ethnological/sociological elements, and are in large part chronicles of past land uses. They may have major relevance to current land use decisions. Class II - sampling field inventory. a statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological properties in a large area by interpreting the results of surveying limited and discontinuous portions of the target area. Class III - intensive field inventory. a continuous, intensive survey of an entire target area, aimed at locating and recording all archaeological properties that have surface indications, by walking close-interval parallel transects until the area has been thoroughly examined. Class III methods vary geographically, conforming to the prevailing standards for the region involved (from M-8100-1, BLM Cultural Resources Management).

Cultural Resource Management Plan. A plan designed to inventory, evaluate, protect, preserve, or make beneficial use of cultural resources and the natural resources that figured significantly in cultural

systems. The objectives of such plans are the conservation, preservation, and protection of cultural values and the scientific study of those values.

Cumulative impact. The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (from H-1790-1, BLM NEPA Handbook).

Desert Land Entry. The Desert Land Act (March 3, 1877) was passed by Congress to encourage and promote the economic development of the arid and semiarid public lands of the Western United States. Through the Act, individuals may apply for a desert-land entry to reclaim, irrigate, and cultivate arid and semiarid public lands.

Designated Roads and Trails. Specific roads and trails identified by BLM (or other agencies) where some type of motorized vehicle use is appropriate and allowed either seasonally or year-long. (from H-1601-1, BLM Land Use Planning Handbook).

Dispersed or Extensive Recreation. Recreation activities of an unstructured type that are not confined to specific locations or dependent on recreation sites. Example of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing.

Disposal. Transfer of public land out of Federal ownership to another party through sale, exchange, Recreation and Public Purposes Act, Desert Land Entry or other land law statutes.

Easement. An interest in land entitling the owner or holder, as a matter or right, to enter upon land owned by another party for a particular purpose.

Ecological Site Description. Description of the soils, uses, and potential of a kind of land with specific physical characteristics to produce distinctive kinds and amounts of vegetation.

Ecological Site Inventory. The basic inventory of present and potential vegetation on BLM rangelands. Ecological sites are differentiated on the basis of significant differences in kind, proportion, or amount of plant species in the plant community. Ecological site inventory uses soils, the existing plant community, and ecological site data to determine the appropriate ecological site for a specific area of rangeland and to assign the appropriate ecological status.

Ecological Succession. An ecosystem's gradual evolution to a stable state or climax. If through the ability of its populations and elements, an ecosystem can absorb changes, it tends to persist and become stable through time.

Eligibility. Qualification of a river for inclusion into the National Wild and Scenic Rivers System through the determination (professional judgment) that it is free-flowing and, with its adjacent land area, possesses at least one river-related value considered to be outstandingly remarkable (from M-8351, BLM WSR Policy and Program).

Endangered Species. Any species which is in danger of extinction throughout all or a significant portion of its range (from M6840, Special Status Species Manual).

Environmental Assessment (EA). (a) A concise public document for which a Federal agency is responsible that serves to: (1) briefly provide sufficient evidence and analysis for determining whether

to prepare an environmental impact statement or a finding of no significant impact; (2) aid an agency's compliance with the Act when no environmental impact statement is necessary; (3) facilitate preparation of a statement when one is necessary. (b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted (from H-1790-1, BLM NEPA Handbook).

Environmental Impact Statement (EIS). A detailed statement prepared by the responsible official in which a major Federal action which significantly affects the quality of the human environment is described, alternatives to the proposed action provided, and effects analyzed (from BLM National Management Strategy for OHV Use on Public Lands).

Ephemeral stream. A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table. Ephemeral streams generally do not flow continuously for more than 30 days and generally have more robust upland vegetation than found outside of the ephemeral riparian-wetland area (USDOI 1998).

Executive Order (EO). An EO is a presidential directive with the force of law. It does not need congressional approval. The Supreme Court has upheld EOs as valid either under the general constitutional grant of executive powers to the President or if authority for it was expressly granted to the President by the Congress. Congress can repeal or modify an EO by passing a new law; however it must be signed by the President or his veto overridden.

Extensive Recreation Management Area (ERMA). A public lands unit identified in land use plans containing all acreage not identified as a SRMA. Recreation management actions within an ERMA are limited to only those of a custodial nature.

Facies. A lateral or vertical variation in the lithologic or paleontologic characteristics of a geologic formation that differs as a group from that elsewhere in the same formation. It is caused by or reflects a change in the depositional environments (Stokes 1986; Skinner & Porter 1992).

Federal Lands. As used in this document, lands owned by the United States, without reference to how the lands were acquired or what Federal agency administers the lands. The term includes mineral estates or coal estates underlying private surface but excludes lands held by the United States in trust for Indians, Aleuts, or Eskimos. (see also Public Land).

Federal Land Policy and Management Act (FLPMA) (of 1976). Public Law 94-579, October 21, 1976, often referred to as BLM's "Organic Act," which provides the majority of BLM's legislated authority, direction policy and basic management guidance (from BLM National Management Strategy for OHV Use on Public Lands).

Federal Register. A daily publication which reports Presidential and Federal Agency documents (from BLM National Management Strategy for OHV Use on Public Lands).

Fire Management Plan. A strategic implementation-level plan that defines a program to manage wildland fire, fuel reduction, and fire rehabilitation based on an area's approved RMP. Fire Management Plans must address a full range of fire management activities that support ecosystem sustainability, values to be protected, protection of firefighter and public safety, public health, and environmental issues. They must be consistent with resource management objectives and activities of the area.

Fluid Minerals. Oil, gas, coal bed natural gas, and geothermal resources.

Forage. Vegetation of all forms available and of a type used for animal consumption.

Functioning at Risk. (1) Condition in which vegetation and soil are susceptible to losing their ability to sustain naturally functioning biotic communities. Human activities, past or present, may increase the risks. Rangeland Reform Final Environmental Impact Statement at 26. (2) Uplands or riparian-wetland areas that are properly functioning, but a soil, water, or vegetation attribute makes them susceptible to degradation and lessens their ability to sustain natural biotic communities. Uplands are particularly at risk if their soils are susceptible to degradation. Human activities, past or present, may increase the risks (Rangeland Reform Draft Environmental Impact Statement Glossary). See also Properly Functioning Condition and Nonfunctioning Condition (from H-4180-1, BLM Rangeland Health Standards Manual).

Geographic Information System (GIS). A system of computer hardware, software, data, people and applications that capture, store, edit, analyze, and graphically display a potentially wide array of geospatial information. (from H-1601-1, BLM Land Use Planning Handbook).

Goal. A broad statement of a desired outcome; usually not quantifiable and may not have established time frames for achievement. (from H-1601-1, BLM Land Use Planning Handbook).

Guideline. A practice, method or technique determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools such as grazing systems, vegetative treatments, or improvement projects that help managers and permittees achieve standards. Guidelines may be adapted or modified when monitoring or other information indicates the guideline is not effective, or a better means of achieving the applicable standard becomes appropriate (from H-4180-1, BLM Rangeland Health Standards Manual).

Habitat. The place where an organism (plant or animal) lives. There are four major divisions of habitat, namely, terrestrial, freshwater, estuarine, and marine (from M6840, Special Status Species Manual).

Habitat Management Plan (HMP). An officially approved activity plan for a specific geographic area of public land. An HMP identifies wildlife habitat and related objectives, defines the sequence of actions to be implemented to achieve the objectives, and outlines procedures for evaluating accomplishments.

High Value Habitat. Any particular habitat that sustains a community, population, or subpopulation. Intensive use areas that because of relative wide distribution do not constitute crucial (UDWR critical) values but are highly important to high interest wildlife. This may also include moderately sensitive habitats of high interest species that have low reclamation potential. Class 3 streams, lakes, ponds, or reservoirs. Reconstruction or enhancement of these areas may be possible, but should be avoided if not possible. Examples include: less crucial (critical) but more widely distributed summer and/or winter ranges; important feeding areas; areas of high wildlife diversity and/or density of high interest species; natural wetlands; and all other riparian areas.

Hydrology. The science dealing with the properties, distribution, and circulation of water.

Impacts (or effects). Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative (from BLM National Management Strategy for OHV Use on Public Lands).

Implementation Decisions. Decisions that take action to implement land use plan decisions; generally appealable to the Interior Board of Land Appeals under 43 CFR 4.410. (from H-1601-1, BLM Land Use Planning Handbook).

Implementation Plan. A sub-geographic or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans (they are types of implementation plans) (from H-1601-1, BLM Land Use Planning Handbook).

Indian Tribe (or tribe). Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the *Federal Register*). (from H-1601-1, BLM Land Use Planning Handbook).

Indicators. Components of a system whose characteristics (presence or absence, quantity, distribution) are used as an index of an attribute (e.g., rangeland health attribute) that are too difficult, inconvenient, or expensive to measure (Interagency Technical Reference 1734-8, 2000) (from H-4180-1, BLM Rangeland Health Standards Manual).

Interdisciplinary Team. Staff specialists representing identified skill and knowledge needs working together to resolve issues and provide recommendations to an authorized officer (from H-4180-1, BLM Rangeland Health Standards Manual).

Interior Board of Land Appeals (IBLA). The Department of the Interior, Office of Hearings and Appeals board that acts for the Secretary of the Interior in responding to appeals of decisions on the use and disposition of public lands and resources. Because the Interior Board of Land Appeals acts for and on behalf of the Secretary of the Interior, its decisions usually represent the Department's final decision but are subject to the courts.

Intermittent or seasonal stream. A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. Generally, intermittent streams flow continuously for periods of at least 30 days and usually have visible vegetation or physical characteristics reflective of permanent water influences, such as the presence of cottonwoods (USDOI 1998)

Interrupted streams. Streams with discontinuities in surface flow along a streambed. These streams may have obligate wetland vegetation, hydric soils, and indicators of permanent water influences. Ephemeral streams generally lack obligate wetland vegetation and hydric soils.

Land Tenure Adjustments. Ownership or jurisdictional changes are referred as "Land Tenure Adjustments". To improve the manageability of BLM lands and improve their usefulness to the public, BLM has numerous authorities for "repositioning" lands into a more consolidated pattern, disposing of lands, acquiring lands, and entering into cooperative management agreements. These land pattern improvements are completed primarily through the use of land exchanges, but also through land sales, land acquisitions, jurisdictional transfers to other agencies, and through the use of cooperative management agreements and leases.

Land Use Allocation. The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the decision area, based on desired future conditions. (from H-1601-1, BLM Land Use Planning Handbook).

Land Use Plan (LUP). A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-

use-plan-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes both RMPs and MFPs. (from H-1601-1, BLM Land Use Planning Handbook).

Land Use Plan Amendment. The process for considering or making changes in the terms, conditions, and decisions of approved RMPs or MFPs. Usually only one or two issues are considered that involve only a portion of the decision area (from H-1601-1, BLM Land Use Planning Handbook).

Land Use Plan Decision. Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to the Interior Board of Land Appeals. (from H-1601-1, BLM Land Use Planning Handbook).

Lease. An authorization or contract by which one party conveys the use of property to another party in return for rental payments, Section 302 of the Federal Land Policy and Management Act of 1976 (FLPMA) provides BLM's authority to issue leases for the use, occupancy, and development of the public lands. Leases are issued for purposes such as communication sites, parks and other recreational facilities. The regulations establishing procedures for the processing of these leases are found in 43 Code of Federal Regulations (CFR) 2920 and 2740.

Lease Stipulation. A modification of the terms and conditions on a lease form at the time of the lease sale.

Leaseable Minerals. Those minerals or materials designated as leaseable under the Mineral Leasing Act of 1920, *as amended*. They include coal, phosphate, asphalt, sulphur, potassium, sodium minerals, oil, and gas,.

Lek. An assembly area where birds, especially sage grouse, carry on display and courtship behavior.

Limited. An area restricted at certain times, in certain areas, and(or) to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following type of categories: Numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions (from BLM National Management Strategy for OHV Use on Public Lands).

Limited Value Habitat. Habitat that is abundant and not essential to sustain a community, population or subpopulation. Occasional use areas that are either sparsely populated or that show sporadic or unpredictable use by high interest wildlife. These areas have limited reclamation potential. Wildlife may be displaced due to the common occurrence of these habitats. Examples include: yearlong deer range of low habitat quality; Class 5 and 6 streams, lakes, ponds or reservoirs; and low quality habitat in juxtaposition to areas of higher wildlife values.

Limits of Acceptable Change. A framework for establishing acceptable and appropriate resource and social conditions in recreation settings. A system of management planning.

Locatable Minerals. Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Low Value Habitat. Habitat that is abundant and not essential to sustain a community, population or subpopulation.

Management Decision. A decision made by BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions. (from H-1601-1, BLM Land Use Planning Handbook).

Management Opportunities. A component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

Mineral. A naturally formed chemical element or compound having a definite chemical composition and, usually, a characteristic crystal form. A mineral is generally considered to be inorganic, though organic compounds are classified as minerals by some. (American Geological Institute 1974). The term is also sometimes informally used to refer to resources such as oil, gas, coal and stone that are derived from the earth.

Mineral Entry. The filing of a claim on public land to obtain the right to any locatable minerals it may contain.

Mineral Materials. Materials such as sand and gravel and common varieties of stone, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws, but that can be acquired under the Materials Act of 1947, as amended.

Mining Claim. A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

Mitigation. A method or process by which impacts from actions may be made less injurious to the environment through appropriate protective measures. 40 CFR 1508.20 further defines mitigation as: (1) Avoiding the impact altogether by not taking a certain action or parts of an action; (2) Minimizing an impact by limiting the degree or magnitude of the action and its implementation; (3) Rectifying the impact by repairing, rehabilitating or restoring the affected environment; (4) Reducing or eliminating the impact over time by preservation and maintenance; (5) Compensating for the impact by replacing or providing substitute resources or environments.

Moderate Value Habitat. Any particular habitat that is common or of intermediate importance.

Monitoring (Plan Monitoring). The process of tracking the implementation of land use plan decisions and collecting and assessing data/information necessary to evaluate the effectiveness of land use planning decisions. (from H-1601-1, BLM Land Use Planning Handbook).

Multiple Use. The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (from FLPMA, Title 43 Chapter 35 Subchapter I 1702[c]).

National Environmental Policy Act (NEPA) (of 1969). NEPA establishes policy, sets goals (section 101) and provides means (section 102) for carrying out the policy. Section 102(2) contains “action-forcing” provisions to make sure that Federal agencies act according to the letter and spirit of the Act. The President, Federal agencies and the courts share responsibility for enforcing the Act so as to achieve the substantive requirements of section 101.

National Register. The National Register of Historic Places, expanded and maintained by the Secretary of the Interior, as authorized by section 2(b) of the Historic Sites Act and section 101(a)(1)(A) of the National Historic Preservation Act. The National Register lists cultural properties found to qualify for inclusion because of their local, State, or national significance. Eligibility criteria and nomination procedures are found in 36 CFR Part 60. The Secretary's administrative responsibility for the National Register is delegated to the National Park Service (from M-8100-1, BLM Cultural Resources Management).

National Wild and Scenic River System. A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) recreation—rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past, (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads, and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

Naturalness. Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. BLM has authority to inventory, assess, and/or monitor the attributes of the lands and resources on public lands, which, taken together, are an indication of an area's naturalness. These attributes may include the presence or absence of roads and trails, fences and other improvements; the nature and extent of landscape modifications; the presence of native vegetation communities; and the connectivity of habitats (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

No Surface Disturbance. In general, this applies to an area where an activity is allowed so long as it does not disturb the surface.

No Surface Occupancy. A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

Noxious Weed. A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the United States.

Objective. A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established timeframes for achievement. (from H-1601-1, BLM Land Use Planning Handbook).

Off-Highway Vehicle (OHV). Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any non-amphibious registered

motorboat: (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used for national defense. (from H-1601-1, BLM Land Use Planning Handbook).

Official Use. Use by an employee, agent, or designated representative of the Federal Government or one of its contractors, in the course of his employment, agency, or representation (from BLM National Management Strategy for OHV Use on Public Lands).

Open. Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 defines the specific meaning of "open" as it relates to off-highway vehicle use. (from H-1601-1, BLM Land Use Planning Handbook).

Outstandingly Remarkable Values. Values among those listed in Section 1(b) of the Act: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values . . ." Other similar values which may be considered include ecological, biological or botanical, paleontological, hydrological, scientific or research values (from M-8351, BLM WSR Policy and Program).

Perennial stream. A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Permit. A short-term, revocable authorization to use public lands for specific purposes, Section 302 of FLPMA provides BLM's authority to issue permits for the use, occupancy, and development of the public lands. Permits are issued for purposes such as commercial or noncommercial filming, advertising displays, commercial or noncommercial croplands, apiaries, harvesting of native or introduced species, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and non-irrigation facilities. The regulations establishing procedures for the processing of these permits are found in 43 Code of Federal Regulations (CFR) 2920.

Permitted Use. The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease, and is expressed in Animal Unit Months (AUMs) (43 CFR § 4100.0-5) (from H-4180-1, BLM Rangeland Health Standards Manual).

Plan of Development. A mandatory plan, developed by an applicant of a mining operation, ROWs or construction project that specifies the techniques and measures to be used during construction and operation of all project facilities on public land. The plan is submitted for approval to the appropriate Federal agency before any construction begins.

Plan of Operations. A plan for mining exploration and development that an operation must submit to BLM for approval when more than 5 acres a year will be disturbed or when an operator plans to work in an area of critical environmental concern or a wilderness area. A Plan of Operations must be submitted for any new operation which began after January 20, 2001 and which has production, regardless of acreage disturbed. A Plan of Operations must document in detail all actions that the operator plans to take from exploration through reclamation.

Planning criteria. The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during

planning. Planning criteria streamline and simplify the resource management planning actions. (from H-1601-1, BLM Land Use Planning Handbook).

Prescribed Fire. Any fire ignited by management action to meet specific objectives. A written approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition (from H-9214-1, BLM Prescribed Fire Management Handbook).

Primitive and Unconfined Recreation. Visitors may have opportunities for primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent, where the use of the area is through non-motorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

Project Plan. A type of implementation plan (see *Implementation plan*). A project plan typically addresses individual projects or several related projects. Examples of project plans include prescribed burn plans, trail plans, and recreation site plans. (from H-1601-1, BLM Land Use Planning Handbook).

Properly Functioning Condition (PFC). (1) An element of the Fundamental of Rangeland Health for watersheds, and therefore a required element of State or regional standard and guidelines under 43 CFR § 4180.2(b). (2) Condition in which vegetation and ground cover maintain soil conditions that can sustain natural biotic communities. For riparian areas, the process of determining function is described in BLM Technical Reference TR 1737-9. Final Environmental Impact Statement at 26, 72. (3) Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bed load, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water, and vegetation. (4) Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geomorphic features, soil, water, and vegetation. SEE ALSO Nonfunctioning Condition and Functioning at Risk (from H-4180-1, BLM Rangeland Health Standards Manual).

Proposed Species. Species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule has been published in the Federal Register (from M6840, Special Status Species Manual).

Public land. Land or interest in land owned by the United States and administered by the Secretary of the Interior through BLM without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf, and land held for the benefit of Indians, Aleuts, and Eskimos. (from H-1601-1, BLM Land Use Planning Handbook).

Range Improvement. An authorized physical modification or treatment which is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; restore, protect and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. The term includes, but is not limited to structures, treatment projects and use of mechanical devices or modifications achieved through mechanical means (43 CFR § 4100.0-5) (from H-4180-1, BLM Rangeland Health Standards Manual).

Rangeland. A kind of land on which the native vegetation, climax or natural potential consists predominantly of grasses, grasslike plants, forbs, or shrubs. Rangeland includes lands revegetated naturally or artificially to provide a non-crop plant cover that is managed like native vegetation. Rangeland may consist of natural grasslands, savannahs, shrublands, moist deserts, tundra, alpine communities, coastal marshes, and wet meadows (from H-4180-1, BLM Rangeland Health Standards Manual).

Recreation and Public Purposes (R&PP) Act. Recreation and Public Purposes Act provided for the lease and sale of public lands determined valuable for public purposes. The objective of the R&PP Act is to meet the needs of State and local government agencies and non-profit organizations by leasing or conveying public land required for recreation and public purpose uses. Examples of uses made of R&PP lands are parks and greenbelts, sanitary landfills, schools, religious facilities, and camps for youth groups. The act provides substantial cost-benefits for land acquisition and provides for recreation facilities or historical monuments at no cost.

Recreation Opportunity Spectrum (ROS). A continuum used to characterize recreation opportunities in terms of setting, activity and experience opportunities. The spectrum covers a range of recreation opportunities from primitive to urban. With respect to river management planning, ROS represents one possible method for delineating management units or zones. See BLM Manual Section 8320 for more detailed discussion (from M-8351, BLM WSR Policy and Program).

Recreation River. Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Relict Plant Community. A remnant or fragment of the vegetation of an area that remains from a former period when the vegetation was more widely distributed.

Research Natural Area (RNA). An area where natural processes predominate and which is preserved for research and education. Research Natural Areas must meet the relevance and importance criteria of Areas of Critical Environmental Concern and are designated as Areas of Critical Environmental Concern.

Resource Advisory Council (RAC). A council established by the Secretary of the Interior to provide advice or recommendations to BLM management. In some states, provincial advisory councils (PACs) are functional equivalents of RACs. (from H-1601-1, BLM Land Use Planning Handbook).

Resource Management Plan (RMP). A BLM planning document, prepared in accordance with Section 202 of the FLPMA, which presents systematic guidelines for making resource management decisions. An RMP is based on an analysis of an area's resources, its existing management, and its capability for alternative uses, RMPs are issue oriented and developed by an interdisciplinary team with public participation.

Resource Use Level. The level of use allowed within an area, based on the desired outcomes and land use allocations in the land use plan. Targets or goals for resource use levels are established on an area-wide or broad watershed level in the land use plan. Site-specific resource use levels are normally determined at the implementation level, based on site-specific resource conditions and needs as determined through resource monitoring and assessments. (from H-1601-1, BLM Land Use Planning Handbook).

Right-of-Way (ROW). The public lands authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a right-of-way authorization.

Riparian Area. A form of wetland transition between permanently saturated wetlands and upland areas. A riparian area is defined as an area of land directly influenced by permanent (surface or subsurface) water. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

Salable Minerals. Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed of by sales or special permits.

Scenic Backways. Paved or unpaved routes that have roadsides or corridors of special aesthetic, cultural, or historic value in more remote, less visited locations. The corridor may contain outstanding scenic vistas, unusual geologic features, or other intrinsic qualities such as cultural, historic, natural, recreational and archaeological values. Scenic Backways can be designated at either the State level or by the BLM during the land use planning process.

Scenic Byways. Highway routes that have roadsides or corridors of special aesthetic, cultural, or historic value. The corridor may contain outstanding scenic vistas, unusual geologic features, or other intrinsic qualities such as cultural, historic, natural, recreational and archaeological values. Scenic Byways can be designated at either the State or the Federal level.

Scenic Quality. The relative worth of a landscape from a visual perception point of view.

Scenic River. A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

Scoping. An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This involves the participation of affected Federal, State, and local agencies, and any affected Indian tribe, the proponent of the action, and other interested persons, unless there is a limited exception under 40 CFR 1507.3I.

Section 7 Consultation. The requirement of Section 7 of the Endangered Species Act that all Federal agencies consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a proposed action may affect a Federally listed species or its critical habitat.

Section 106 Compliance. The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the Federal Government be reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

Sensitive Species. Those species designated by a State Director, usually in cooperation with the State agency responsible for managing the species and State Natural heritage programs, as sensitive. They are those species that: (1) could become endangered in or extirpated from a State, or within a significant portion of its distribution; (2) are under status review by the USFWS and/or NMFS; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that Federal listed, proposed, candidate, or State listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are State listed but which may be better conserved through application of BLM sensitive species status (from M6840, Special Status Species Manual).

Significant. An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, whether beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

Spatial Management. As used in this document, intensive control of the location and level of surface disturbance that is allowed in a particular area.

Special Recreation Management Area (SRMA). A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities (i.e., activity, experience, and benefit opportunities). BLM recognizes three distinct types of SRMAs: destination; community; and undeveloped. (from H-1601-1, BLM Land Use Planning Handbook).

Special Status Species. Includes proposed species, listed species, and candidate species under the Endangered Species Act; state-listed species; and BLM state director-designated sensitive species (see BLM Manual 6840, Special Status Species Policy). (from H-1601-1, BLM Land Use Planning Handbook).

Solitude. Visitors may have outstanding opportunities for solitude, or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent, where visitors can be isolated, alone or secluded from others, where the use of the area is through nonmotorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

Standard. A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., Land Health Standards). To be expressed as a desired outcome (goal). (from H-1601-1, BLM Land Use Planning Handbook).

State Listed Species. Species listed by a State in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation (from M6840, Special Status Species Manual).

Strutting Ground. An area used by sage grouse in early spring for elaborate, ritualized courtship displays. See also Lek.

Substantial Value Habitats. Any particular habitat that is common or of intermediate importance. Existence areas used regularly by high interest wildlife but are moderate levels with little or no concentrated use. These areas may also include moderately sensitive habitats of high interest species with moderate reclamation potential. Wildlife uses may be displaced in response to development. Examples include: extensive summer and/or winter ranges receiving regular use well below carrying capacity having little potential for increase due to other limiting factors; Class 4 streams, lakes, ponds or reservoirs; and areas of moderate habitat quality.

Suppression. All the work of extinguishing or containing a fire, beginning with its discovery.

Surface Occupancy. Placement or construction on the land surface (either temporary or permanent) for more than 14 days requiring continual service or maintenance. Casual use is not included.

Take. Harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The term applies only to fish and wildlife (from M6840, Special Status Species Manual).

Threatened Species. Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (from M6840, Special Status Species Manual).

Timing Limitation (Seasonal Restriction). A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

Total Maximum Daily Load (TMDL). An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria. (from H-1601-1, BLM Land Use Planning Handbook).

Unsuitability Criteria. Criteria of the Federal coal management program by which lands may be assessed as unsuitable for all or certain stipulated methods of coal mining.

User Day. Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator or permittee on the public lands or related waters; synonymous with passenger day or participant day.

Utility. A service provided by a public utility, such as electricity, telephone, or water.

Valid Existing Rights. Any authorization or right established. Valid existing rights are established by various laws, leases, and filings made with the BLM.

Visual Resources. The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Visual Resource Management (VRM). The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Resource Management (VRM) Classes. Visual resource management classes define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape, as described below:

Class I: The objective for VRM Class I is to preserve the existing character of the landscape. This class provides for natural ecological changes; it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention,

Class II: The objective for VRM Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape,

Class III: The objective for VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Any changes should repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape, and

Class IV: The objective for VRM Class IV is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.

Visual Sensitivity Levels. Measures of public concern (e.g. high, medium, low) for the maintenance of scenic quality.

Water Quality. The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Watershed. The 5th level of the hydrologic unit delineation system. A watershed is coded with 10 numerical digits, and watersheds range in size from 40,000 to 250,000 acres (Subcommittee on Spatial Water Data, 2000) (from H-4180-1, BLM Rangeland Health Standards Manual).

Wild River. Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Wilderness. A congressionally designated area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Wilderness Characteristics. Features of the land associated with the concept of wilderness that specifically deal with naturalness and opportunities for solitude and primitive unconfined recreation. These characteristics may be considered in land use planning when BLM determines that those characteristics are reasonably present, of sufficient value (condition, uniqueness, relevance, importance) and need (trend, risk), and are practical to manage (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

Wilderness Study Area (WSA). Areas that have been inventoried and found to have wilderness characteristics as described in Section 603 of FLPMA and Section 2(c) of the Wilderness Act of 1964. These areas are under study for possible inclusion as a Wilderness Area in the National Wilderness Preservation System.

Wildland Fire. Any fire, regardless of ignition source, that is burning outside of a prescribed fire and any fire burning on public lands or threatening public land resources, where no fire prescription standards have been prepared (from H-1742-1, BLM Emergency Fire Rehabilitation Handbook).

Wildland Fire Use. The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in Fire Management Plans.

Wildland Urban Interface (WUI). The line, area, or zone in which structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Withdrawal. Removal or withholding an area of Federal land from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of Federal land, other than “property” governed by the Federal Property and Administrative Services Act, as amended (40 U.S.C. 472) from one department, bureau or agency to another department, bureau or agency (from FLPMA, Title 43 Chapter 35 Subchapter I 1702[j]).

Woodland. A forest community occupied primarily by non-commercial species such as juniper, pinyon pine, mountain mahogany, or quaking aspen groves; all western juniper forestlands are considered woodlands, since juniper is classified as a non-commercial species.

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CHAPTER 10 – REFERENCES

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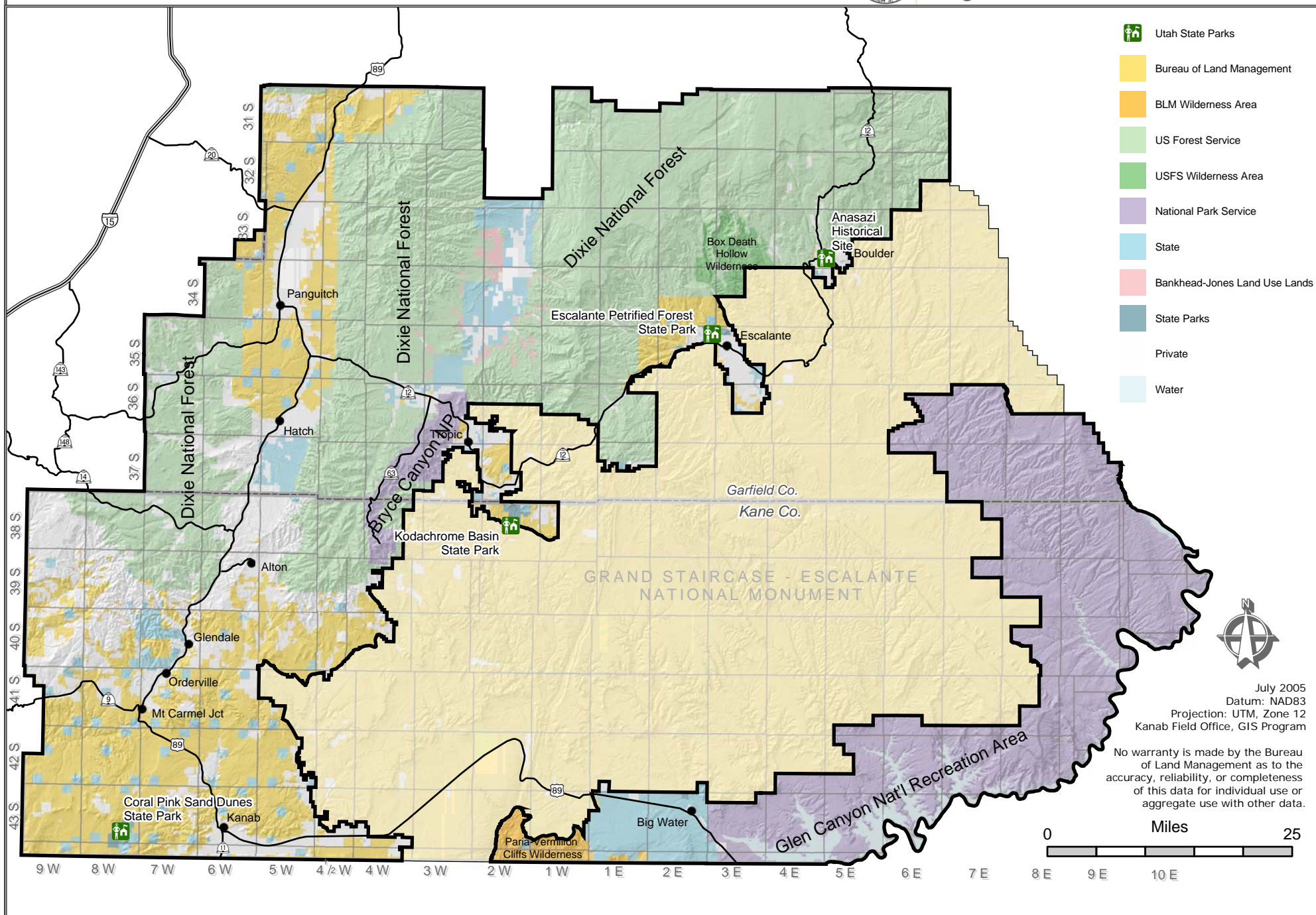
MAPS

Map 1 - Land Ownership

Analysis of the Management Situation, Kanab Resource Management Plan



U.S. Department of the Interior
Bureau of Land Management

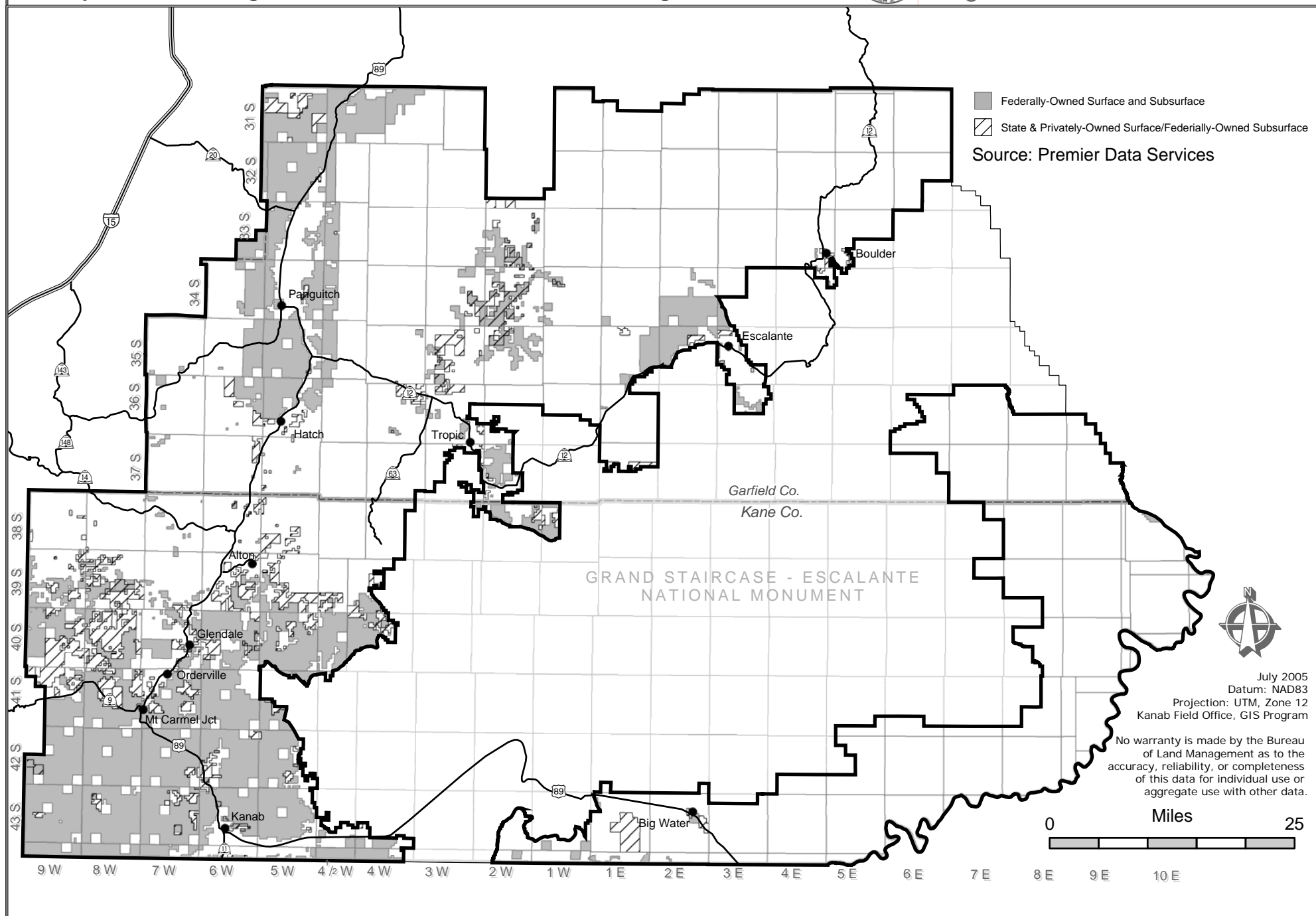


Map 2 - Subsurface Ownership

Analysis of the Management Situation, Kanab Resource Management Plan



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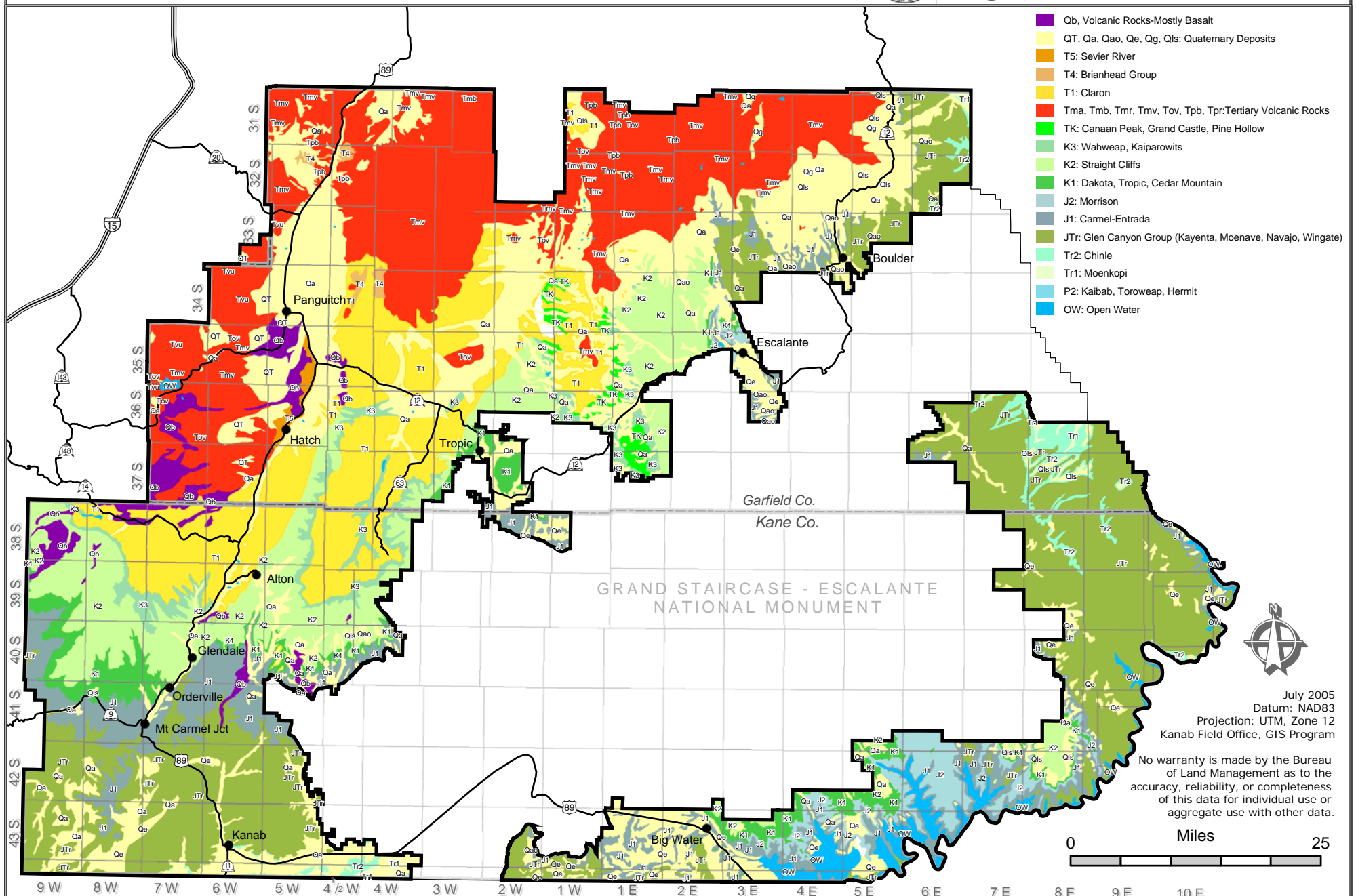


Map 3 - Geology

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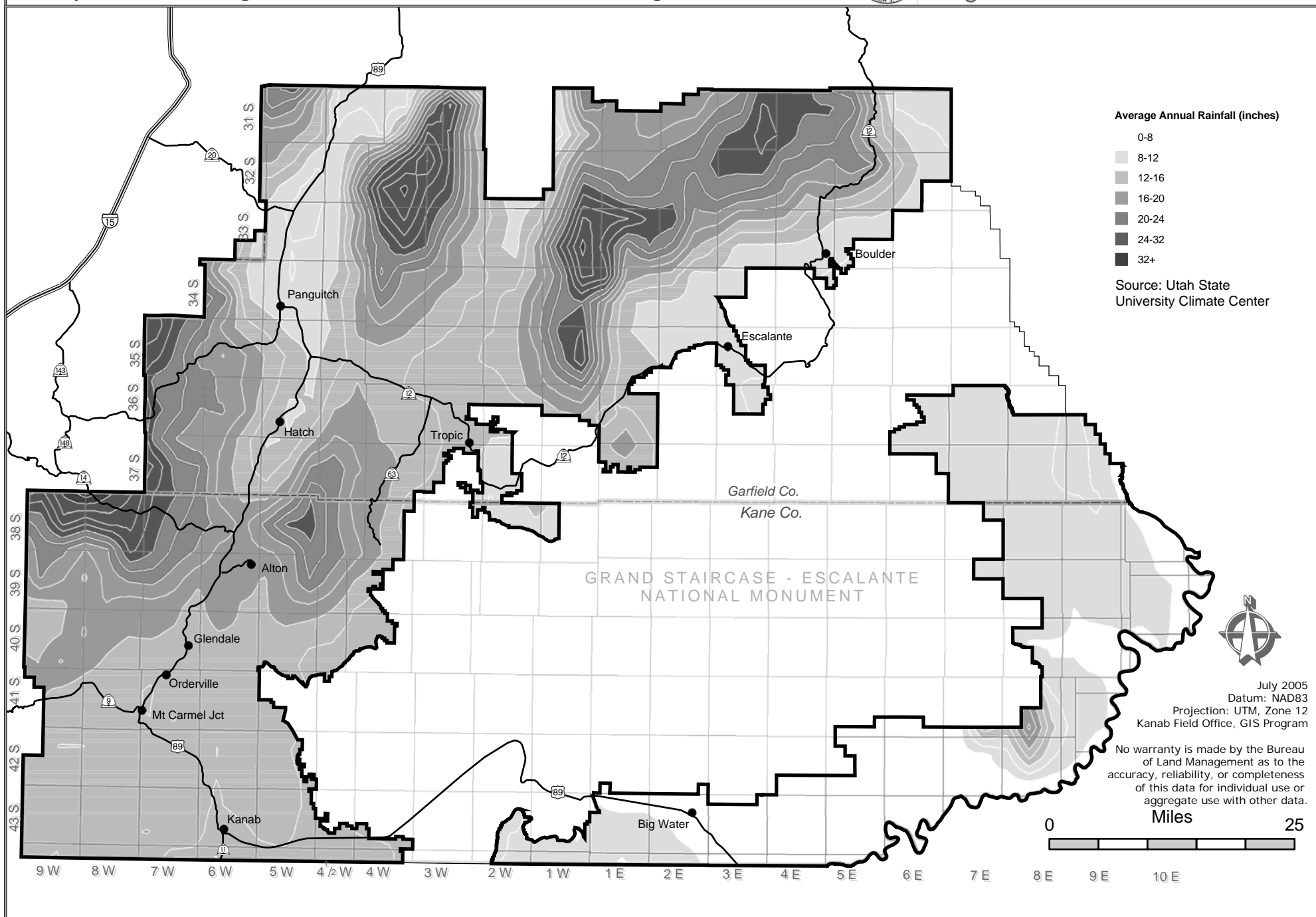


Map 4 - Precipitation

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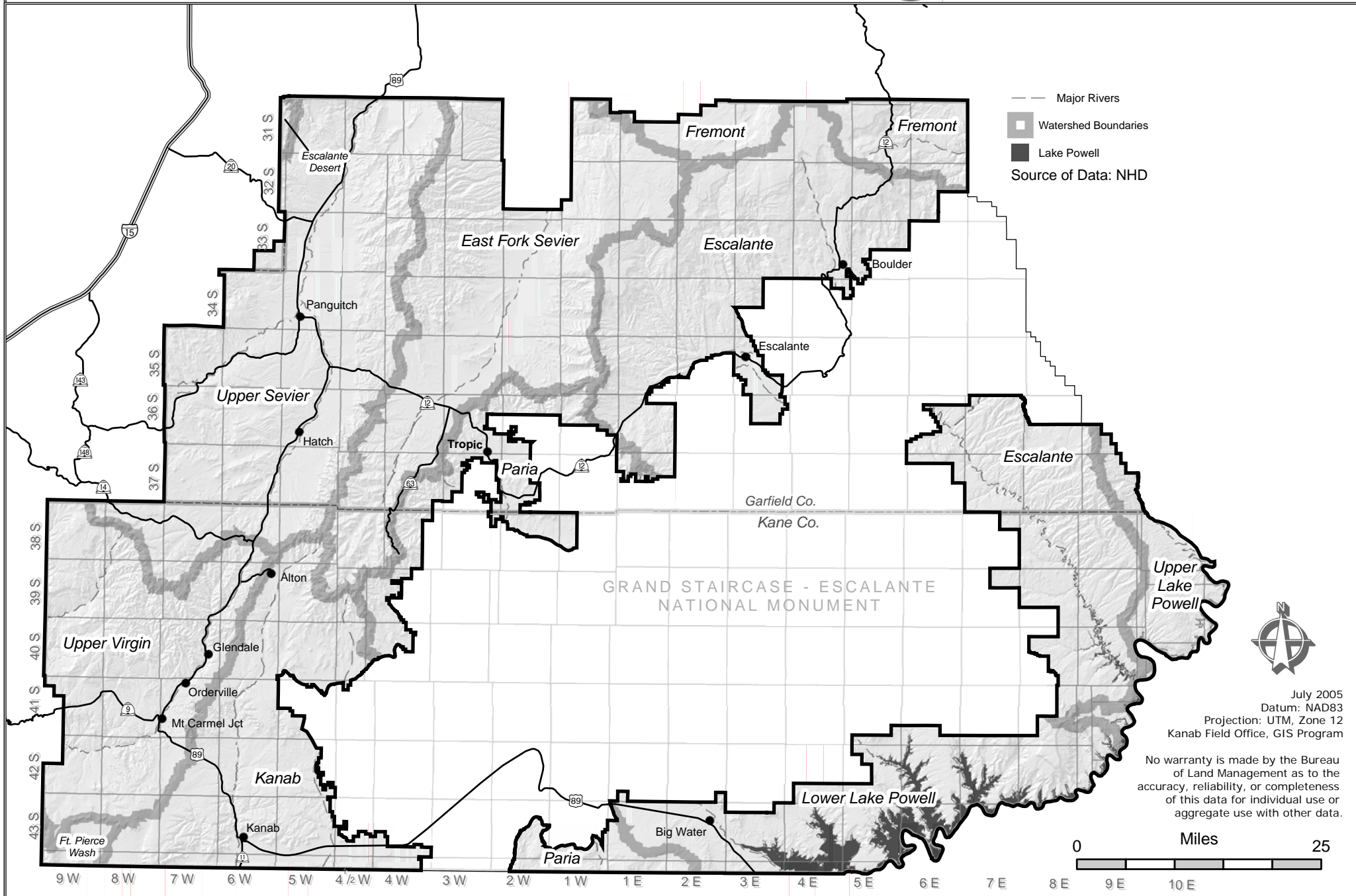


Map 5 - Watersheds

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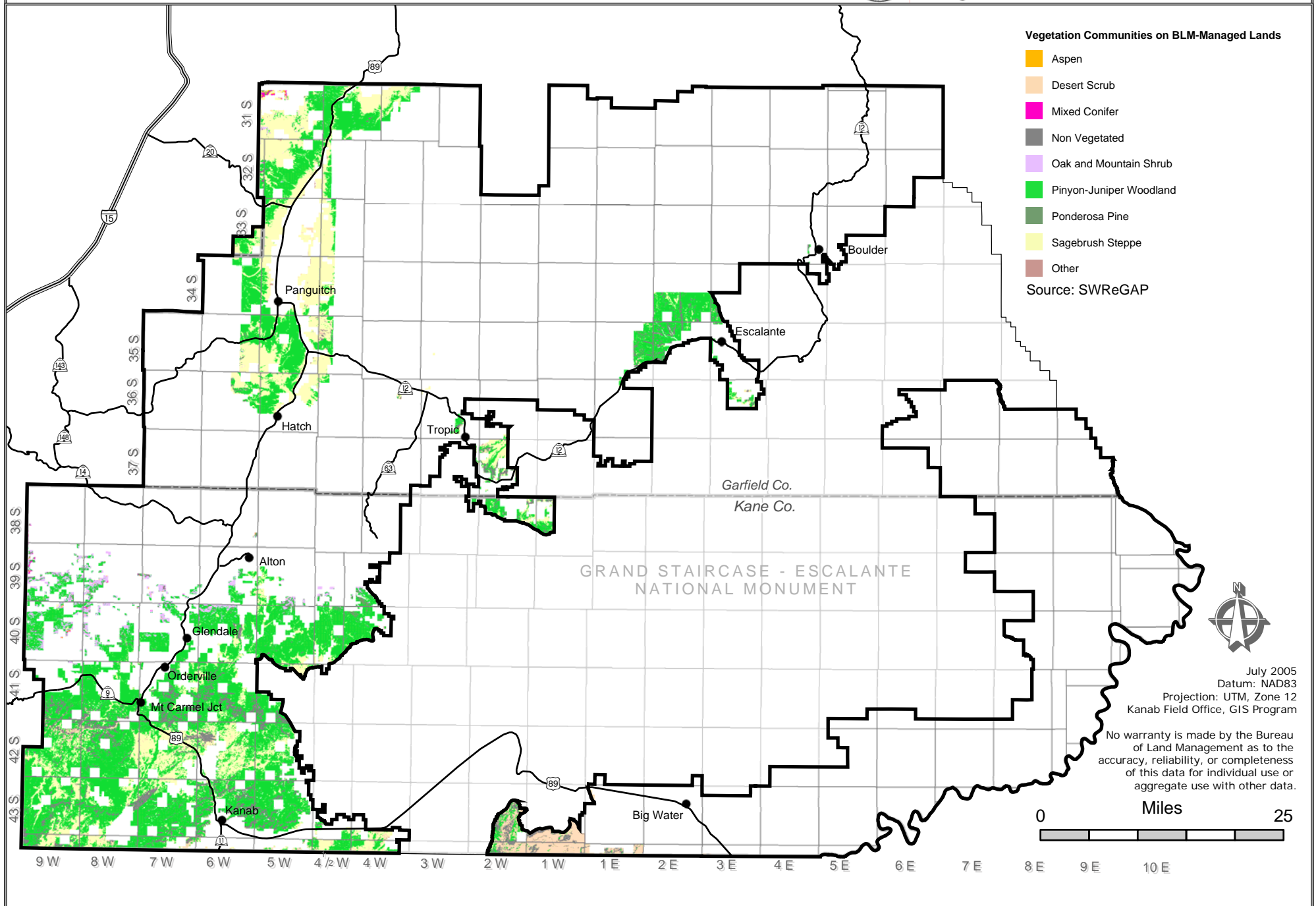


Map 6 - Vegetation Communities and Associations

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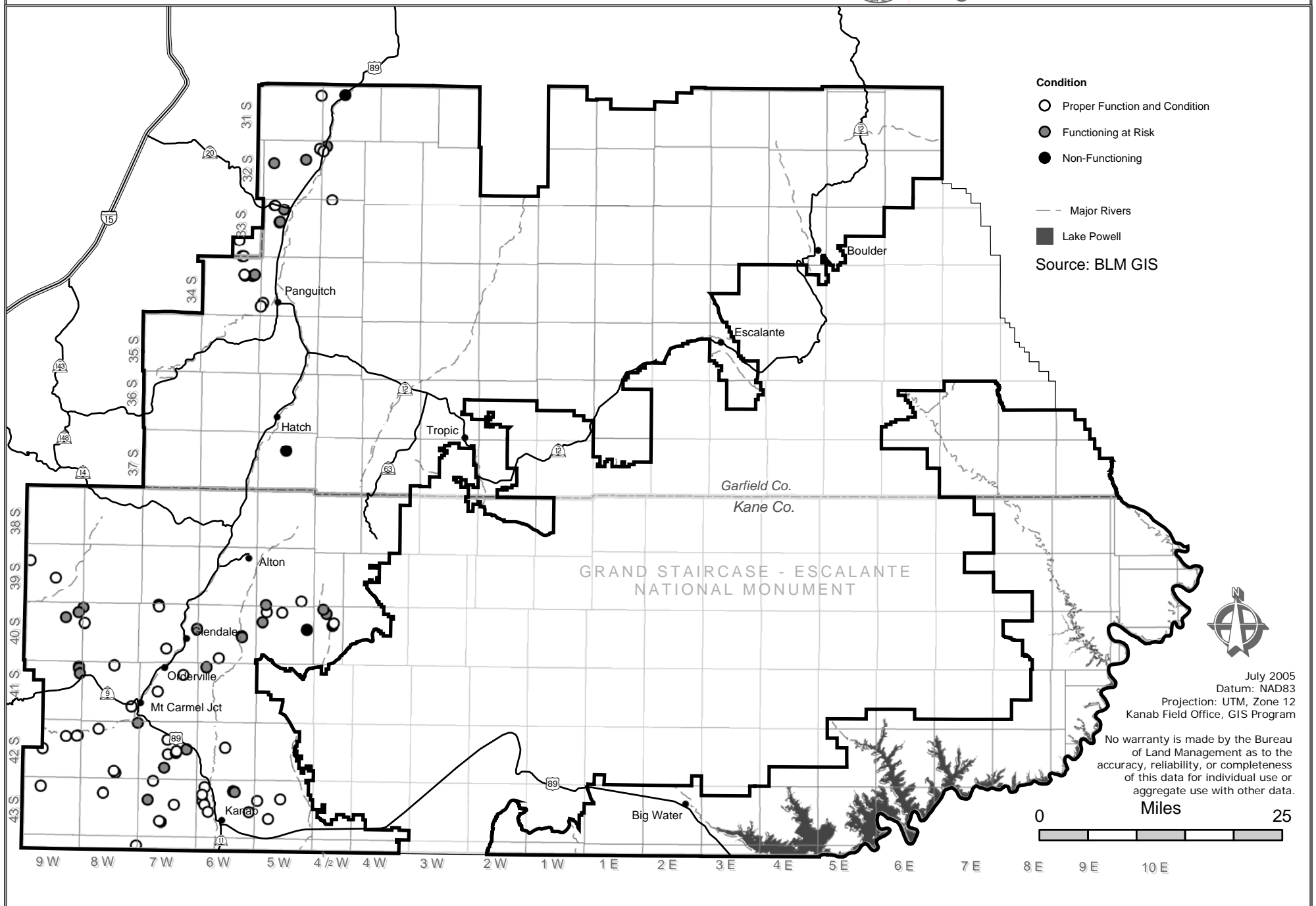


Map 7 - Riparian/Wetland Areas

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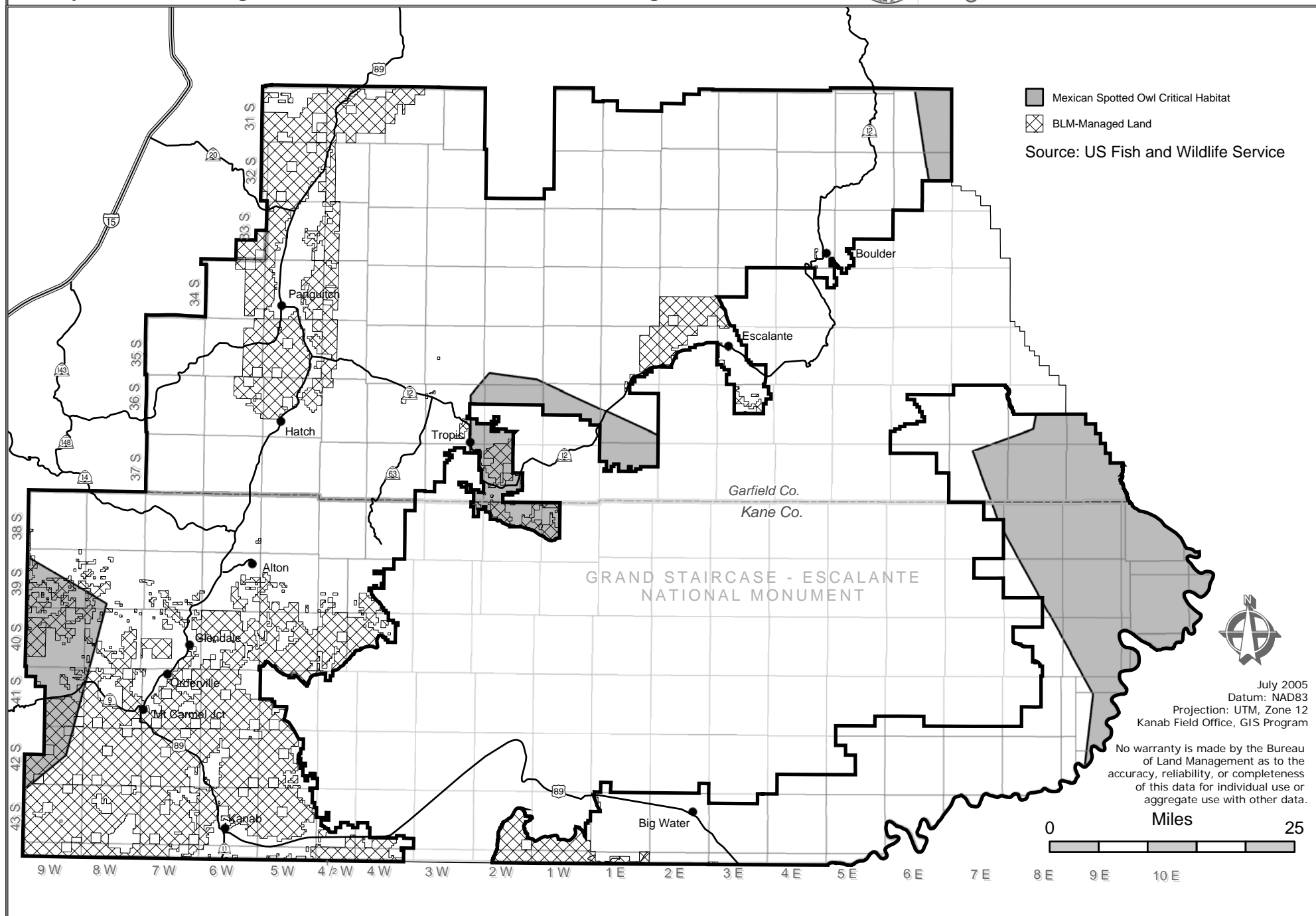


Map 8 - Mexican Spotted Owl Critical Habitat

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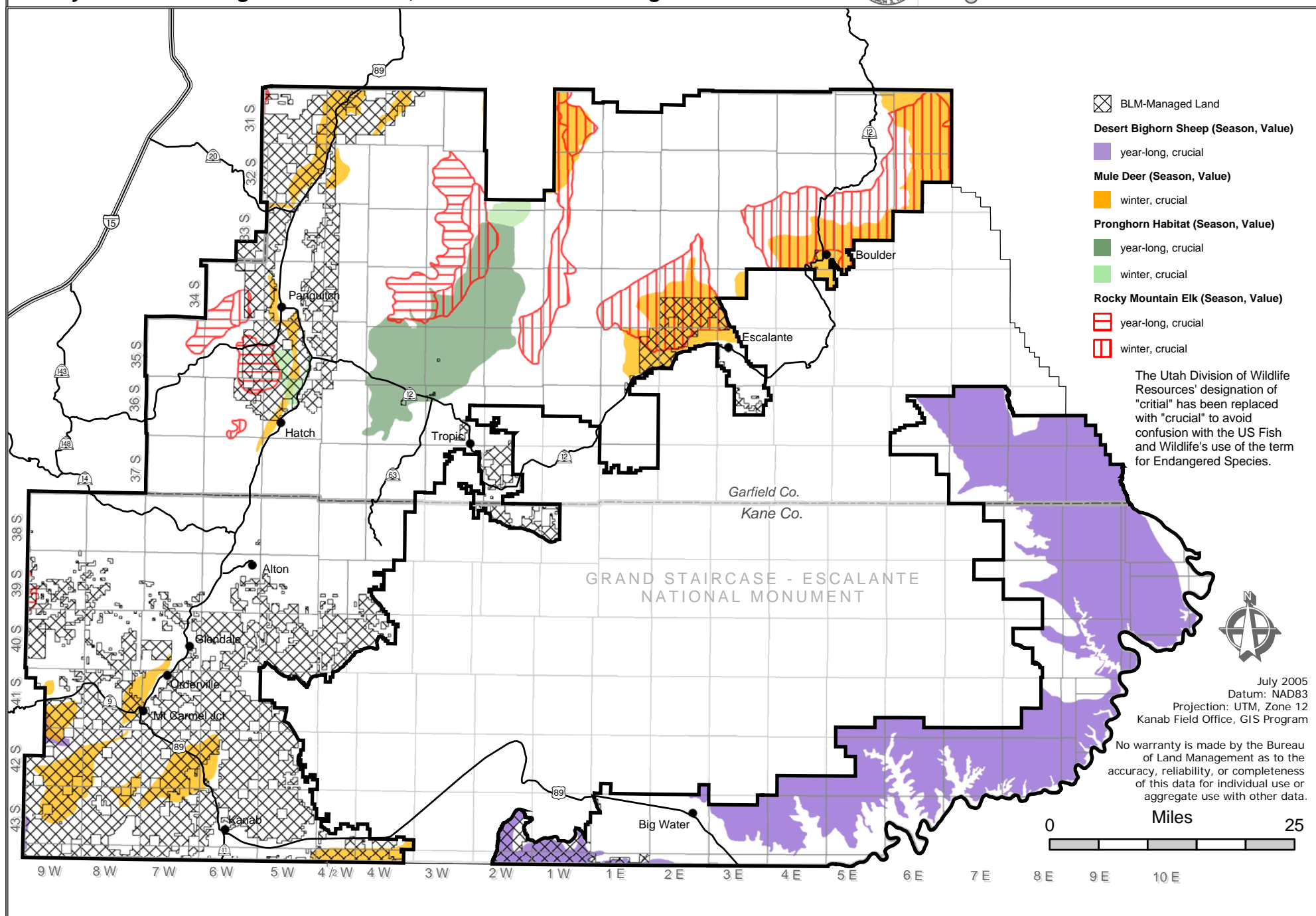
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Map 9 - Big Game Crucial Winter and Year Long Areas Analysis of the Management Situation, Kanab Resource Management Plan



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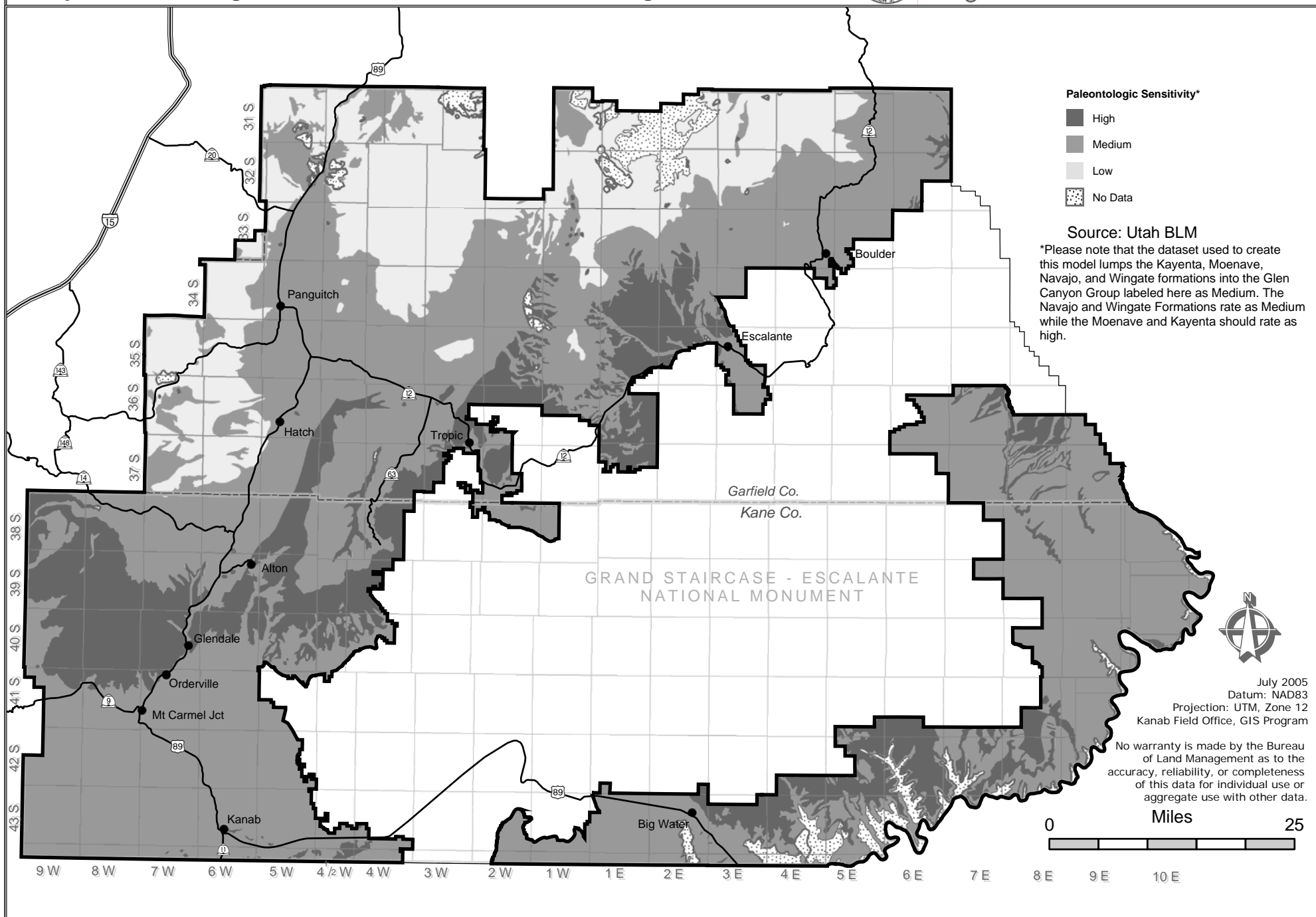


Map 10 - Paleontology Sensitivity

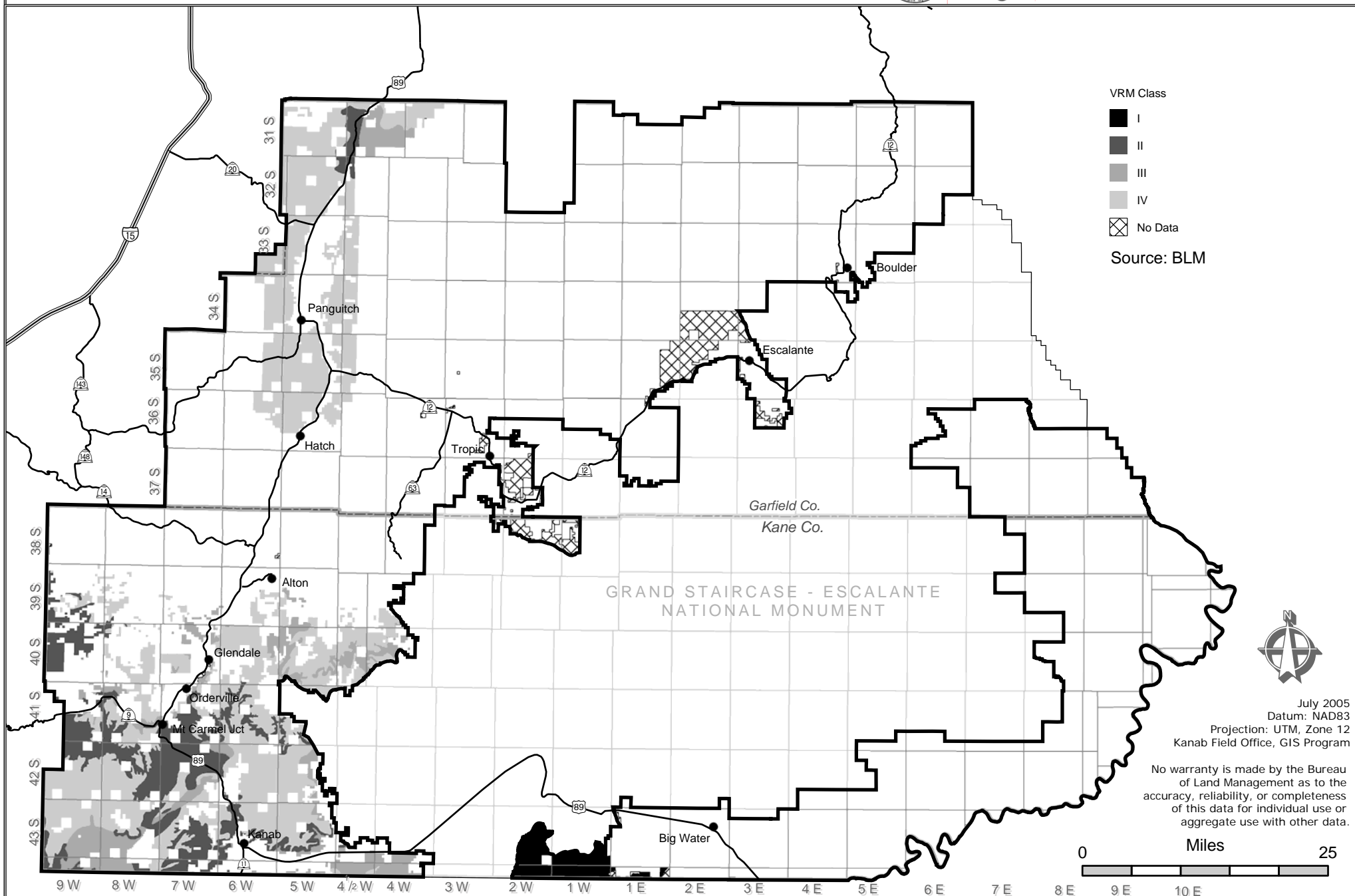
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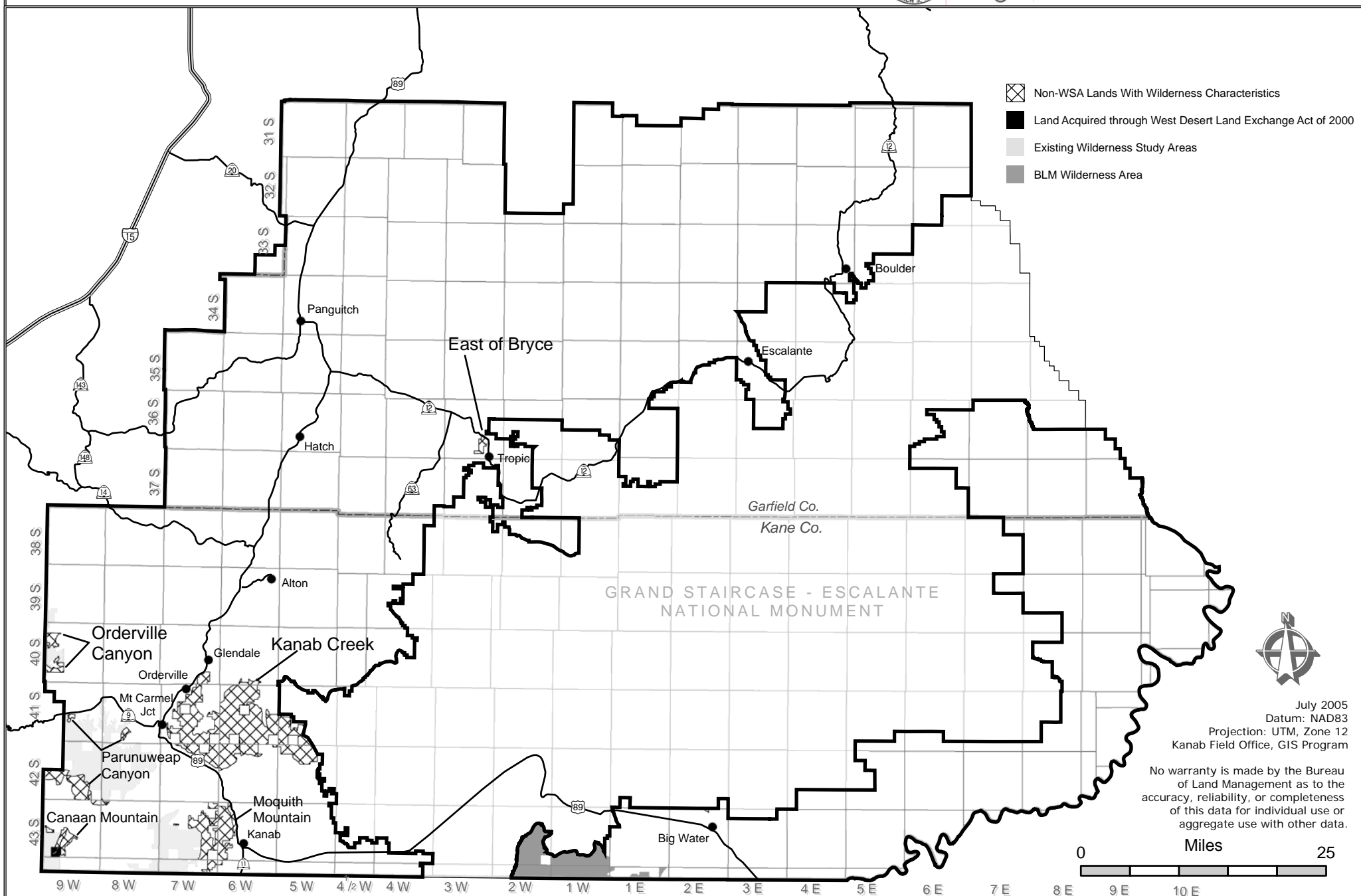


Map 12 - Lands With Wilderness Characteristics

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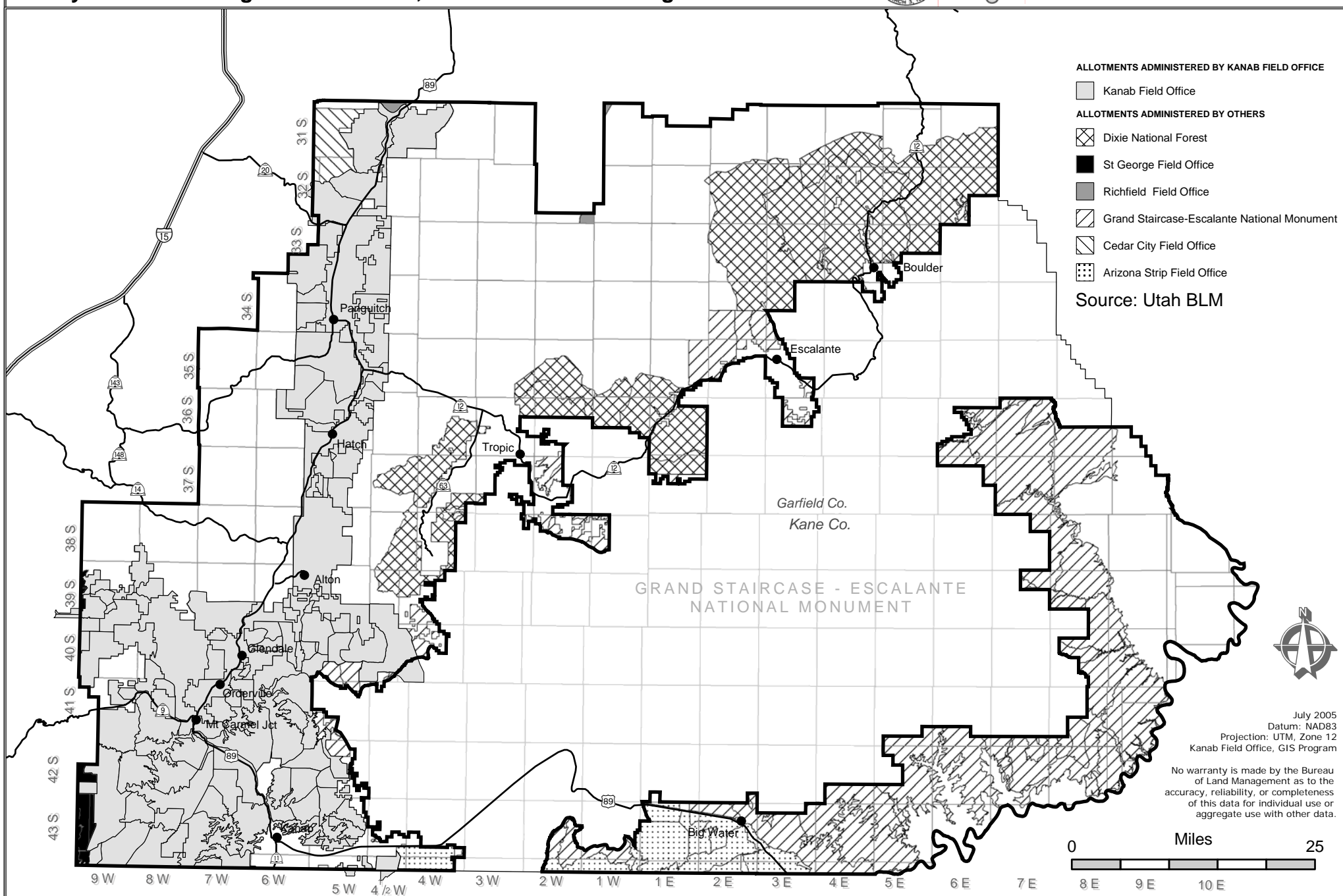


Map 13 - Livestock Grazing Allotments

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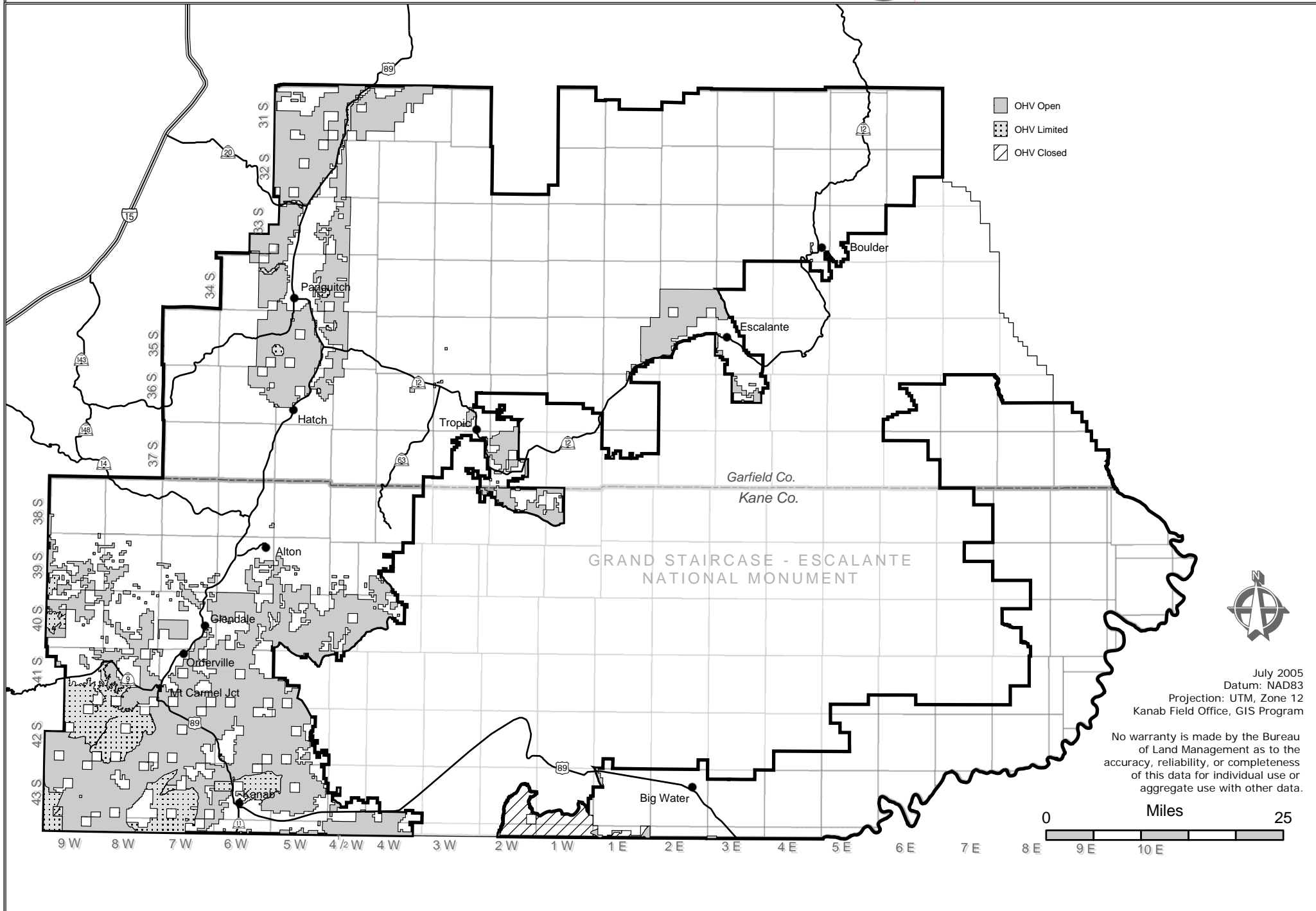


Map 14 - OHV Designations

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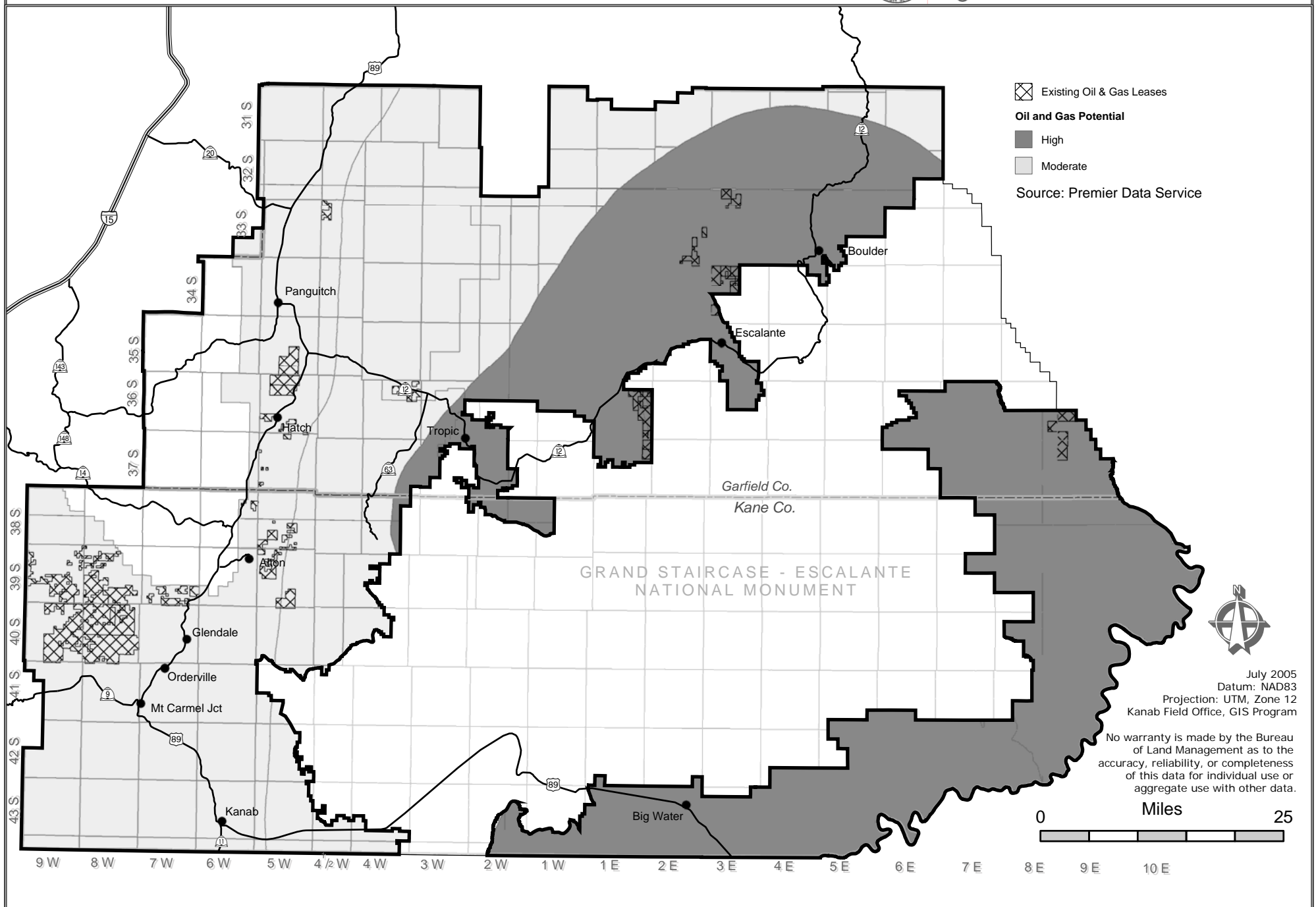


Map 15 - Existing Oil and Gas Leases and Occurrence Potential

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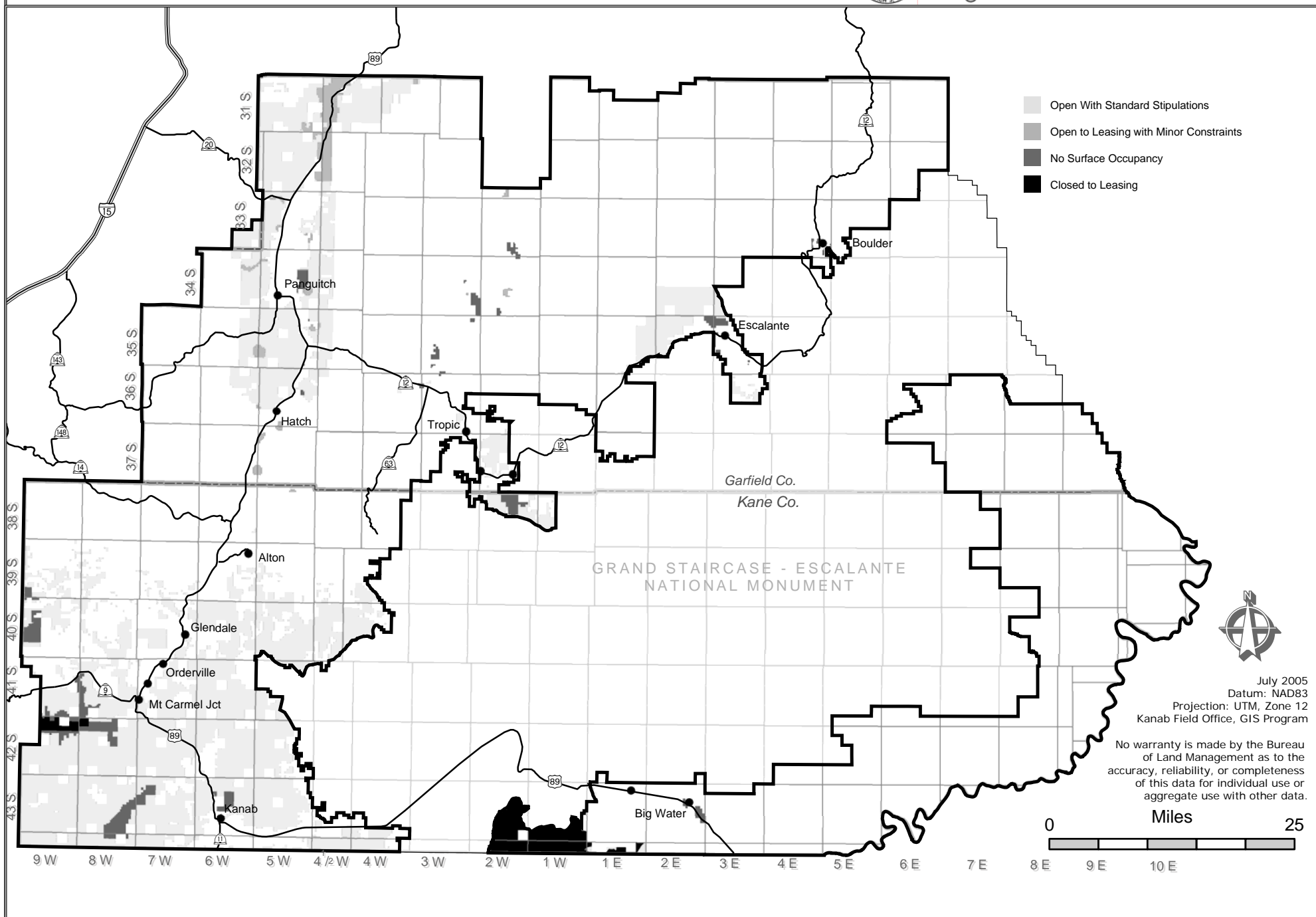


Map 16 - Oil and Gas Leasing Categories

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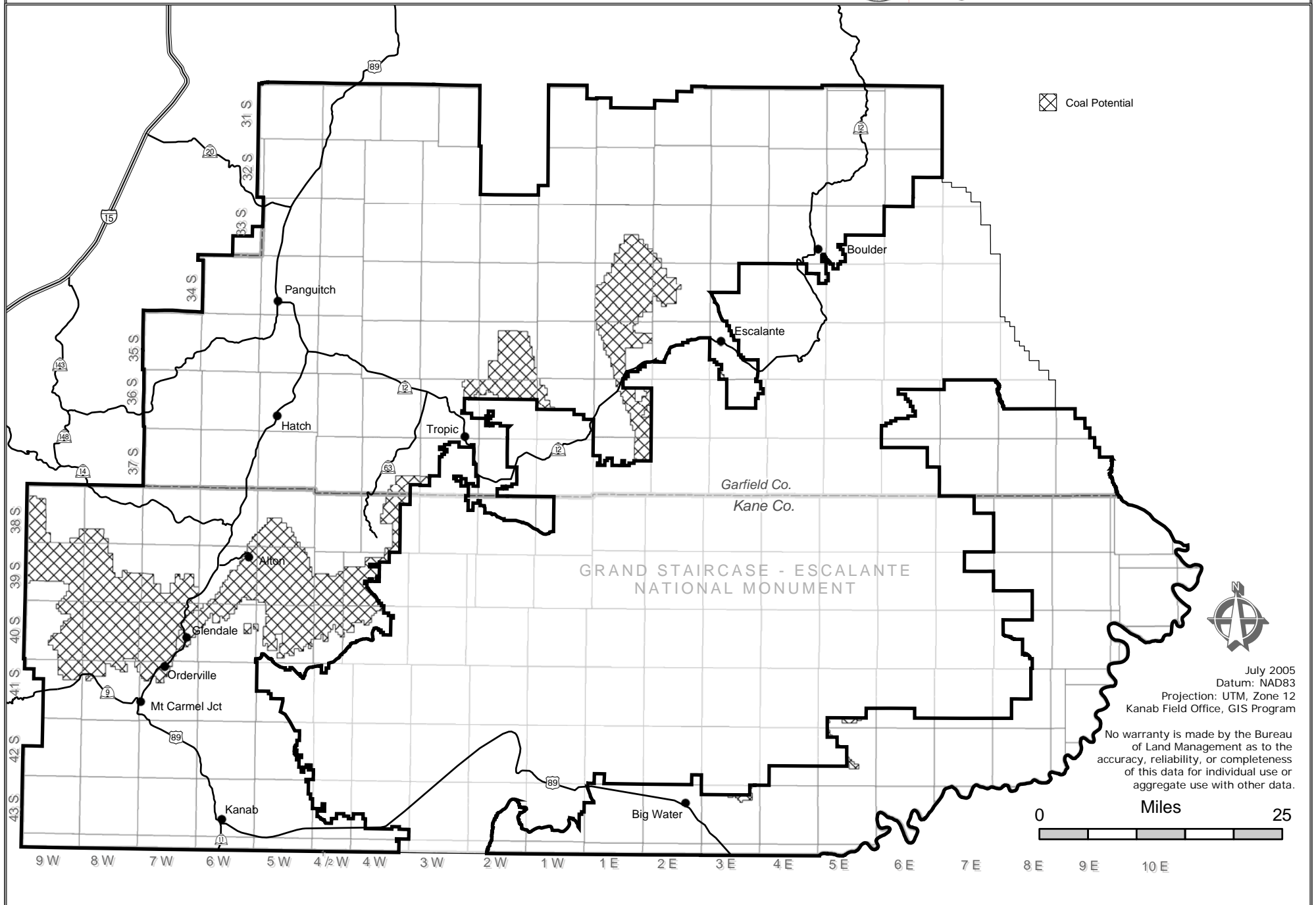


Map 17 - Coal Potential

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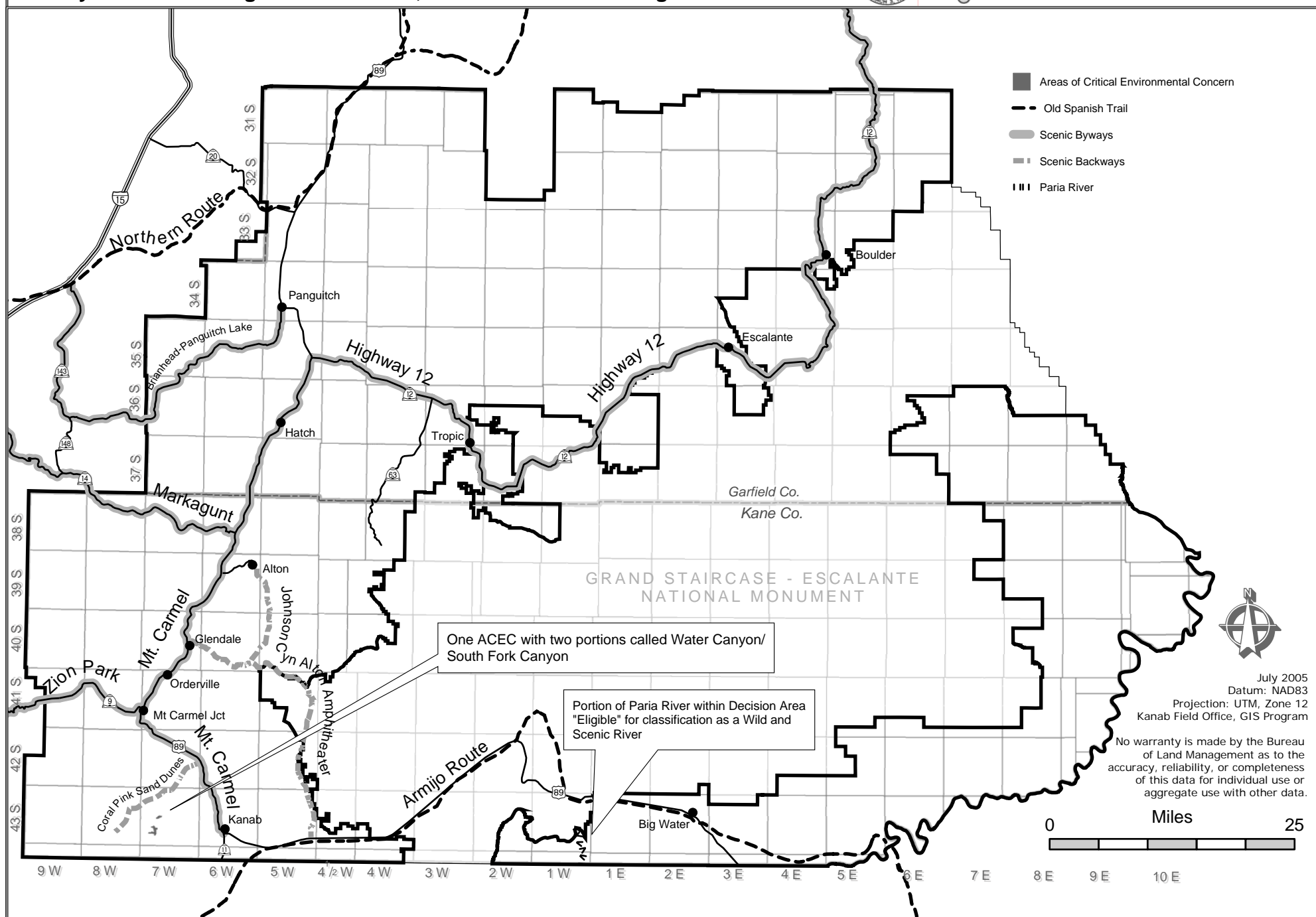


Map 18 - Special Designations

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July 2005
Datum: NAD83
Projection: UTM, Zone 12
Kanab Field Office, GIS Program

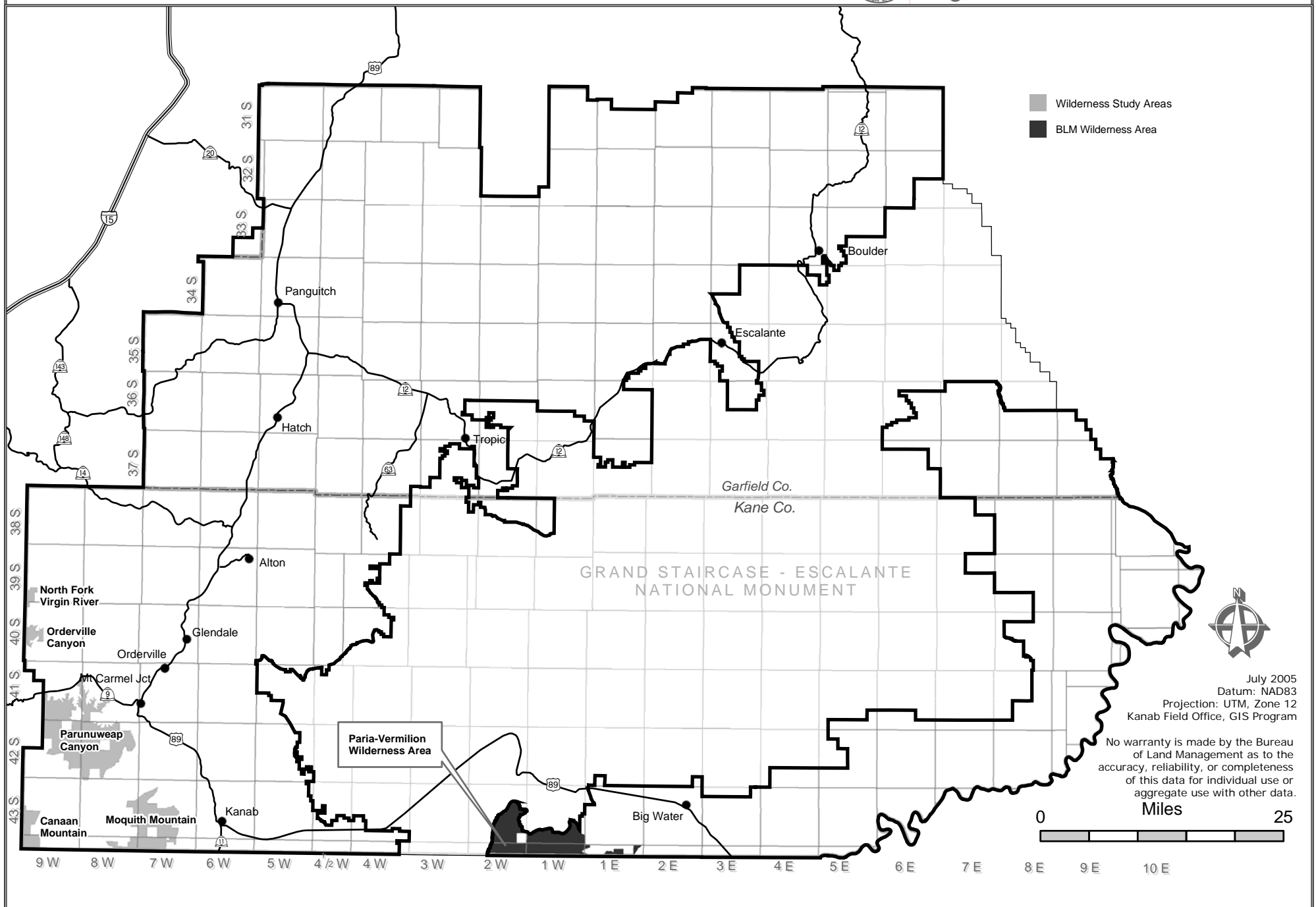
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Map 19 - Wilderness and Wilderness Study Areas

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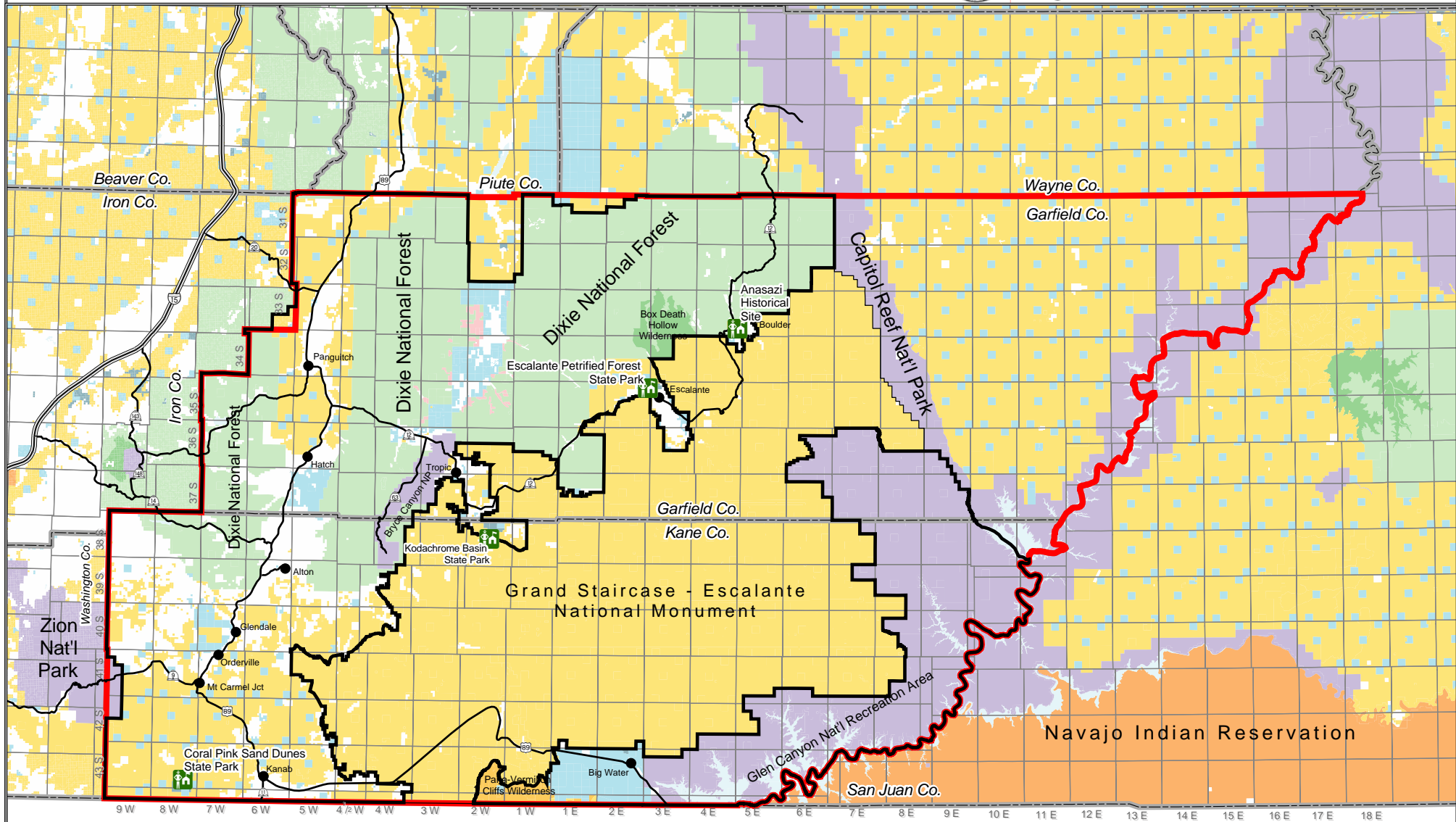


Map 20 - Socioeconomic Study Area

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- | | | |
|---------------------------|-----------------------|--------------------|
| State Parks | BLM Wilderness Area | Indian Reservation |
| Socioeconomic Study Area | US Forest Service | Bankhead-Jones |
| Kanab Planning Boundary | USFS Wilderness Area | State Parks |
| Bureau of Land Management | National Park Service | Private |
| State | Water | |

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Datum: NAD83
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Map 21 - Existing Plans

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